

T.C.
İSTANBUL ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
İNGİLİZCE İKTİSAT ANABİLİM DALI

DOKTORA TEZİ

**EMPIRICAL APPLICATIONS IN TOURISM
DEMAND AND TOURISM OUTPUT GROWTH:
THE CASE OF MUĞLA**

Çağrı ARSLAN

2502180128

TEZ DANIŞMANI

Prof. Dr. Nihal TUNCER TERREGROSSA

İSTANBUL, 2024

ÖZ

TURİZM TALEBİNDE VE TURİZM ÇIKTI BÜYÜMESİNDE AMPİRİK UYGULAMALAR: MUĞLA ÖRNEĞİ

ÇAĞRI ARSLAN

Muğla'nın çevresel varlıkları, zengin kültürel mirası ve hızla gelişen altyapısı, bölgenin turizm potansiyelini artırırken aynı zamanda sürdürülebilirlik ve etkin yönetim ihtiyacını da beraberinde getirmektedir. Turizm ekonomisi ile çevresel, kültürel ve altyapısal faktörler arasındaki dinamik etkileşimleri anlamak ve bu doğrultuda politika yapıcılar ve paydaşlar için bilimsel bir yol haritası sunabilmek çalışmanın temel motivasyonunu oluşturmaktadır. Bu çalışmada kullanılan panel veri seti, kesitsel birimler olarak Muğla ilindeki 13 ilçeyi, 2014-2021 aralığını yıllık bazda kapsamaktadır. Farklı bölümlerde ileri adımlı havuzlanmış EKK, Arellano-Bover/Blundell-Bond sistem GMT, çok değişkenli analiz gibi yöntemler kullanılmaktadır.

Tezde çevresel, kültürel ve altyapısal varlıkların öneminin sınanması hedeflenmektedir. Bunun için destinasyonların çevresel karakteristiğiyle doğrudan ilişkili olan turizm ekonomisinin teorik çerçevesi kullanılmaktadır. Çalışma odak bölge olarak Muğla ilini almaktadır. Öyle ki iktisadi, çevresel, kültürel ve altyapısal 24 bağımsız değişkenlik bir veri setiyle paket programların algoritmalarından faydalanılarak turizm talebinin optimal tahminleyicileri tespit edilmektedir. Tezin bu bölümü, literatürdeki önceki çalışmalardan benzersiz içeriği, verileri ve metodolojisiyle ayrılmaktadır. Literatürdeki çalışmaların çoğu modele ekonomik dinamikleri dahil etmiş ancak çevresel, kültürel, tarihsel ve altyapısal değişkenler gibi ekonomik olmayan faktörleri modele dahil etmemiştir (bkz. Brida & Risso, 2009; Gonzalez & Moral, 1995; Liu vd., 2021). Metodolojiye gelince, ampirik çalışmanın makul bir teorik temele dayanması bulguların güvenilirliği açısından çok önemlidir. Sonuçlar, çevresel değişkenler arasında ‘mavi bayraklı plajların’, ormanla kaplı alanın (km²) ve bir çevresel sürdürülebilirlik temsili değişkeni olan arıtılan su miktarının (m³) turizm talebi üzerindeki etkisinin oldukça fazla olduğunu göstermektedir. Turistler daha yeşil destinasyonları daha çok talep ediyor. Ayrıca altyapısal değişkenlerin

(özellikle ulaşım) turizm talebini etkilediği görülmektedir. Çakıl ve asfalt yol uzunluğu ile havalimanı skoru bağımsız değişkenlerinin taleple ilişkisi oldukça anlamlıdır, ayrıca katsayısı yüksektir. Asıl şaşırtıcı olan, Yunanistan'ı ziyaret eden yabancı turist sayısı ile Muğla'yı ziyaret eden arasında pozitif ilişki bulunmaktadır. Yunan adaları ve Muğla tamamlayıcı mal konumundadır. Ampirik bulgular ikisinden birine giden turistin diğerini de (muhtemelen denizyolu ile) ziyaret ettiği tezini doğrulamaktadır. Bir diğer en önemli determinant ise konaklama işletmelerinin oda kapasitesidir, diğer değişkenlere göre daha yüksek bir katsayıya sahiptir. Say'ın (1803) "arz kendi talebini yaratır" tezini doğrular nitelikte bir bulgudur. Ancak ekonometrik sonuçlardan çıkan ilgi çekici ve negatif bir çıkarım ise tarihsel varlıkların turizm talebi üzerinde yoğun bir etkiye sahip olmamasıdır. UNESCO miras listesinde birden çok yeri bulunan bir il olan, tarih öncesinden bugüne dek farklı kültürel miraslara sahip birçok uygarlığa ev sahipliği yapmış olan bir destinasyonda turistlerin talebini kültürel mirasın etkilememesi politika yapıcılar ve paydaşlar için endişe verici olmalıdır. Öyle ki, yöresel giyim, yemekler ve danslarımızla ilgili unsurların turistik işletmelerin hizmet desenlerinde belli oranlarda zorunlu olması bir yandan kültürel mirasımızı aktarmamıza, diğer yandan ise lokal yerleşiklerin turizm faaliyetlerinden daha çok iktisadi kazanç sağlamasını sağlar. Ayrıca sahip olunan kültürel ve tarihi mirasın reklam ve pazarlama faaliyetleri daha sistematik yürütülürse, turistler destinasyonda daha uzun zaman geçirebilir, haliyle daha çok harcama yaparlar.

Tezin bir başka araştırma sorusu ise Muğla'nın çevresel, kültürel ve altyapısal varlıklarının bilimsel yöntemlerle kantatif metriklere dönüştürülüp dönüştürülemeyeceğidir. Literatürde yer alan çalışmalarda (bkz. Saltelli, 2002; Saltelli et al., 2004; Saltelli, 2007; Saltelli et al., 2008; Saisana M. & Tarantola, 2002; Saisana et al., 2005; Sharpe, 2004; OECD, 2008) istatistiksel ve cebirsel yöntemlerle Muğla'nın ilçelerine her yıl için 3 farklı endeks değeri atfedilebileceği fark edilmiştir. Kompozit indikatörlerin avantajları ve dezavantajları bulunmaktadır. Bir yandan endeksler karar vericilere yardımcı olmak için karmaşık, çok boyutlu gerçeklikleri özetleyebilir. Diğer taraftan Aşırı basitleştirilmiş politika sonuçlarına neden olabilir. Sırasıyla çok değişkenli analiz, normalizasyon, ağırlıklandırma, toplama ampirik süreçleri uygulanarak endeks değerleri bölünür. Sonuçlar çok şaşırtıcı değildir.

Marmaris, Datça ve Ula'nın doğal çevresel endeks skorları diğer ilçelerden daha yüksektir. 3 ilçenin bir ortak özelliği vardır. 3 ilçenin de hem kara yüzölçümünün, hem de deniz karasularının büyük bir bölümü 'özel çevre koruma' bölgesi içerisinde kalmaktadır. Bodrum'dan sonra en çok turist çeken ve gayrimenkul birim (m²) fiyatlarına bakımından en yüksek ilçeler çevresel skoru yüksek olanlardır. Nedensellik ilişkisi bu çalışmanın konusu değil ancak şüphesiz bölgenin çevresel kalitesini korumak, betonlaşmanın önüne geçerek şehir estetiğini korumaktadır. Kültürel endekse bakıldığında Bodrum ve Fethiye'nin diğer ilçelerden çok daha yüksek skora sahip olduğu görülmektedir. Karya tarih öncesi uygarlığının en büyük kentinin Bodrum olması, ören yeri ve tarihi alanlardan zengin olması, Bodrum Kalesinin UNESCO miras listesinde yer alması, Halikarnas Mozolesi'nin varlığı, birçok yöresel yiyecek festivalinin Bodrum'da gerçekleşmesi çıkan sonucun normal olduğunu göstermektedir. Diğer taraftan Likya uygarlığının dini ve idari merkezleri olan ve UNESCO'nun kalıcı listesinde bulunan Letoon ve Xanthos antik kentlerinin varlığı, dünyanın en ünlü antik rotalarından biri olan Likya Yolu'nun varlığı Fethiye'nin kültürel skorunun yüksek olmasına sebep olmaktadır.

Endeks skorların oluşturulmasındaki temel amaç, Solow-Swan neo-klasik büyüme modelinde geleneksel girdiler olan sermaye ve emeğin yanında birer büyüme faktörü olup olamayacağını sınamaktır. Dinamik panel veri yöntemi kullanılmaktadır. Bu entegre yaklaşım, turizm ekonomisini daha geniş kalkınma ve çevresel hedeflerle birleştirerek büyüme dinamikleri hakkında çok boyutlu bir bakış açısı sunar.

Oluşturulan endeks değişkenler büyüme modeline sırasıyla eklendiğinde, çevresel endeksin de turizm çıktı büyümesindeki değişim üzerinde açıklayıcı güce sahip olduğu görülmektedir. Öyle ki diğer emek ve sermaye girdilerinden daha yüksek katsayıya sahiptir. Kültürel ve altyapı endeks değişkenlerinin çevresel endeksin aksine ekonometrik olarak anlamsız olduğu görülmektedir. Muğla'nın iktisadi olarak 'deniz-kum-güneş' tipi bir destinasyondan öteye gidemediğine dair önemli bir bulgudur. Halbuki önemli tarih öncesi krallıklara ev sahipliği yapan, UNESCO miras listesinde birden çok destinasyonu bulunan bir bölgenin kültürel ve tarihi varlıklarının istatistiksel olarak anlamsız olması merkezi planlayıcıları düşündürmesi gereken bir konudur. Kültürel mirasın korunması için daha fazla fon ayrılmalı, yerel temalı

etkinlikler teşvik edilmeli, farklı bölgelerdeki belirgin kültürel uygulamalar sergilenerek bölgesel çeşitlilik vurgulanmalı ve kültürel alanların sanal turları gibi kültürel varlıkları sergileyen etkileşimli web siteleri ve uygulamalar oluşturularak dijital platformlardan yararlanılmalıdır.

Bir diğer endeks değişken olan altyapı endeksin ekonometrik olarak anlamlı olmadığı görülmektedir. Bir turizm destinasyonunun, altyapı ve üstyapının olmadığı durumda talep görmesi rasyonel değildir. Altyapı, pratikte turizm çıktısı için oldukça önemli bir değişkendir. Ancak, altyapı endeksi kümülatif olarak artmaya devam etmektedir, yıllar içinde turist sayısında dalgalanmalar gözlemlenmektedir. O yüzden, regresyonda bir girdi olarak altyapı endeksinin çıktı büyümesinin izole bir belirleyicisi olmaması şaşırtıcı değildir.

Sürekli-zaman ekonomisinde çıktı büyümesinin zamana göre diferansiyelini alarak doğrusallaştırıldığı ve büyümenin girdilere dağıtıldığı 'büyüme muhasebesi' metodunda dinamik panel tahmincinin kullanılmasının örtüşme derecesi bakımından statik modellerden daha uygun olduğu görülmektedir. Turizm çıktısının dinamik karakteristiği ve 'bir yıl gecikmeli konaklama sayısının' önemli bir bağımsız değişken olduğu ekonometrik olarak doğrulanmaktadır. Bir diğer söylemle sonuçlar, Muğla'yı ziyaret eden turistlerin bir sonraki yıl tekrar geldikleri ve/veya pozitif 'ağızdan ağıza yayılma' etkisi hipotezlerini doğrular niteliktedir. Diğer zorunlu girdiler olan sermaye (oda kapasitesi) ve emek (konaklama sektöründe sigortalı çalışan sayısı) de ekonometrik olarak her üç modelde de anlamlıdır. Başka bir ampirik sonuç, turizm çıktısında 'ölçeğe göre artan getirilerin' varlığıdır. En yüksek katsayıya sahip bağımsız değişken olan çevresel endeks artırılabilirse, oransal olarak çıktıdaki artış girdideki artıştan daha büyük olacaktır.

Anahtar Kelimeler: Turizm talebi, optimal değişkenler, çevresel faktör, kültürel faktör, altyapısal faktör, kompozit indikatör, turizm büyümesi.

ABSTRACT

EMPIRICAL APPLICATIONS IN TOURISM DEMAND AND TOURISM OUTPUT GROWTH: THE CASE OF MUĞLA

ÇAĞRI ARSLAN

Muğla's environmental assets, rich cultural heritage and rapidly developing infrastructure increase the region's tourism potential while also bringing with it the need for sustainability and effective management. The main motivation of the study is to understand the dynamic interactions between tourism economy and environmental, cultural and infrastructural factors and to provide a scientific roadmap for policy makers and stakeholders in this direction. The panel data set used in this study covers 13 districts in Muğla province as cross-sectional units and the period 2014-2021 on annual basis. Methods such as forward-stepwise pooled OLS, Arellano-Bover/Blundell-Bond system GMM, and multivariate analysis are used in different chapters.

The dissertation aims to test the importance of environmental, cultural and infrastructural assets. For this purpose, the theoretical framework of tourism economy, which is directly related to the environmental characteristics of destinations, is utilized. The study's focal point is Muğla province. In fact, with a dataset of 24 independent variables, economic, environmental, cultural and infrastructural, the optimal predictors of tourism demand are determined by using the algorithms of package programs. This part of the thesis stands out from previous studies in the literature with its unique content, data and methodology. Most of the studies in the literature have included economic dynamics in the model but have not included non-economic factors such as environmental, cultural, historical and infrastructural variables (see Brida & Risso, 2009; Gonzalez & Moral, 1995; Liu et al., 2021). Regarding the methodology, it is very important for the reliability of the findings that the empirical study is based on a reasonable theoretical basis. The results show that among the environmental variables, the number of 'blue flag beaches', the area covered by forest (km²) and the amount of treated water (m³), a proxy variable for environmental sustainability, have a significant effect on tourism demand. Tourists demand greener destinations more. It is also seen

that infrastructural variables (especially transportation) affect tourism demand. The relationship between the independent variables of gravel and asphalt road length and airport score and demand is quite significant, and their coefficients are also high. What is really surprising is that there is a positive relationship between the number of foreign tourists visiting Greece and those visiting Muğla. The Greek islands and Muğla are complementary goods. Empirical findings confirm the thesis that tourists visiting one of the two also visit the other (probably via seaway). Another most important determinant is the room capacity of accommodation establishments, which has a higher coefficient than the other variables. This is a finding that confirms Say's (1803) thesis that "supply creates its own demand". However, an interesting and negative inference from the econometric results is that historical assets do not have a significant effect on tourism demand. It should be alarming for policy makers and stakeholders that cultural heritage does not affect tourist demand in a destination that has hosted many civilizations with different cultural heritages from prehistory to the present, a province with more than one place on the UNESCO heritage list. In fact, the elements related to our local clothing, food and dances must be mandatory in certain proportions in the service patterns of touristic establishments. On the one hand, it allows us to transfer our cultural heritage, and on the other hand, it allows local residents to gain more economic profit from tourism activities. In addition, if the advertising and marketing activities of the cultural and historical heritage are carried out more systematically, tourists can spend longer in the destination and therefore spend more.

Another research question of the thesis is whether the environmental, cultural and infrastructural assets of Muğla can be converted into quantitative metrics with scientific methods. In the studies in the literature (see Saltelli, 2002; Saltelli et al., 2004; Saltelli, 2007; Saltelli et al., 2008; Saisana M. & Tarantola, 2002; Saisana et al., 2005; Sharpe, 2004; OECD, 2008), it has been noticed that 3 different index values can be attributed to the districts of Muğla for each year with statistical and algebraic methods. Composite indicators have advantages and disadvantages. On the one hand, indices can summarize complex, multidimensional realities to help decision makers. On the other hand, they can lead to oversimplified policy results. Index values are divided by applying empirical processes of multivariate analysis, normalization,

weighting, and aggregation, respectively. The results are not very surprising. The natural environmental index scores of Marmaris, Datça and Ula are higher than the other districts. The 3 districts have one common feature. Both the land surface area and a large part of the sea waters of all 3 districts are within the ‘special environmental protection’ zone. The districts that attract the most tourists and have the highest real estate unit (m2) prices after Bodrum are the ones with high environmental scores. The causality relationship is not the subject of this study, but undoubtedly protecting the environmental quality of the region, preventing concreting and protecting the aesthetics of the city. When we look at the cultural index, it is seen that Bodrum and Fethiye have much higher scores than the other districts. The fact that Bodrum was the largest city of the Carian prehistoric civilization, that it is rich in archaeological sites and historical areas, that Bodrum Castle is on the UNESCO heritage list, that Halicarnassus Mausoleum exists, and that many local food festivals take place in Bodrum show that the result is normal. On the other hand, the existence of the ancient cities of Letoon and Xanthos, which were the religious and administrative centers of the Lycian civilization and are on the permanent list of UNESCO and the existence of the Lycian Way, one of the most famous ancient routes in the world, cause Fethiye to have a high cultural score.

The primary goal of developing the index scores is to determine whether the Solow-Swan neo-classical growth model can incorporate growth factors other than the conventional inputs of labor and capital. It employs a dynamic panel data method. This integrated strategy offers a multifaceted view of growth dynamics by fusing the tourism economy with more general development and environmental and cultural objectives.

When the index variables are added to the growth model in order, it is seen that the environmental index has explanatory power on the change in tourism output growth. In fact, it has a higher coefficient than other labor and capital inputs. It is seen that the cultural and infrastructure index variables are econometrically insignificant, unlike the environmental index. It is an important finding that Muğla's tourism type cannot go beyond 'sea-sand-sun' tourism. However, the fact that the cultural and historical assets of a region that hosted important prehistoric kingdoms and has more

than one destination on the UNESCO heritage list cannot be considered as tourism input econometrically is an issue that should make central planners think. More funds should be allocated for the protection of cultural heritage, local themed events should be encouraged, regional diversity should be emphasized by exhibiting distinct cultural practices in different regions, and digital platforms should be used by creating interactive websites and applications that exhibit cultural assets such as virtual tours of cultural areas.

Another index variable, the infrastructure index, is seen to be econometrically insignificant. It is not rational for a tourism destination to be in demand when there is no infrastructure and superstructure. Infrastructure is a very important variable for tourism output in practice. However, the infrastructure index continues to increase cumulatively, and fluctuations in the number of tourists are observed over the years. Therefore, it is not surprising that the infrastructure index, as an input in the regression, is not an isolated determinant of output growth.

In the continuous-time economy, it is seen that the use of dynamic panel estimator is more appropriate than static models in terms of goodness-of-fit in the 'growth accounting' method, where output growth is linearized by taking its differential with respect to time and growth is distributed to inputs. The dynamic characteristic of tourism output and econometrically significance of 'number of overnight stays lagged by one year' as an independent variable are approved. In other words, the results confirm the hypotheses that tourists visiting Muğla come back the next year and/or have a positive 'word of mouth' effect. Other mandatory inputs, capital (room capacity) and labor (number of insured employees in the accommodation sector), are also significant econometrically in all three models. Another empirical outcome is the existence of 'increasing returns to scale' in tourism output. If the environmental index, which is the independent variable with the highest coefficient, can be increased, the increase in output will be proportionally greater than that in input.

Key Words: Tourism demand, optimal variables, environmental factor, cultural factor, infrastructural factor, composite indicator, tourism growth.

ACKNOWLEDGEMENT

I am grateful to all those who have contributed to the successful completion of this dissertation. Nevertheless, I would like to extend my heartfelt gratitude to a select few individuals.

Initially, I would like to express deep appreciation to my valued advisor, Prof. Dr. Nihal Tuncer Terregrossa, for her unwavering support, patience, and dedication. She has generously shared her experiences and provided invaluable guidance in both my personal and academic pursuits. In addition, I am grateful to the committee members Prof. Dr. Ferda Yerdelen Tatoğlu and Asst. Prof. Dr. Türkan Turan, whose expertise I have consulted many times during the course of the dissertation and received feedback, for their contributions. I am also thankful to T.C. Muğla Sosyal Güvenlik Kurumu İl Müdürlüğü, T.C. Muğla Kültür ve Turizm İl Müdürlüğü, Muğla Büyükşehir Belediyesi and T.C. Kültür ve Turizm Bakanlığı for their invaluable assistance in resolving the challenges we faced during the dataset construction process. Their persistent backing for our scientific investigation is greatly appreciated.

Undoubtedly, for a person who is at the dissertation stage and is responsible for taking care of his family, there are mental and emotional difficulties as well as academic ones. In this context, I am indebted to my wife, Şeyma Arslan, my mother, Hatice Arslan, my father Bayram Arslan and my daughter, Ayliz Akay Arslan, for their unalterable emotional and mental support, which enabled me to concentrate on my doctoral dissertation. To conclude, I dedicate this Ph.D. to my lovely daughter. Your presence significantly facilitated the completion of my dissertation.

Çağrı ARSLAN

Muğla, 2024

TABLE OF CONTENTS

ÖZ	ii
ABSTRACT	vi
ACKNOWLEDGEMENT.....	x
LIST OF FIGURES	xvi
LIST OF TABLES	xviii
LIST OF ABBREVIATIONS	xx
INTRODUCTION.....	1

CHAPTER ONE

STYLIZED FACTS OF MUĞLA: ECONOMICAL, SOCIAL, CULTURAL, ENVIRONMENTAL AND TOURISM ASPECTS

1.1. Introduction	8
1.2. History of Muğla	10
1.3. Economical and Sociological Overview	11
1.4. Characteristics of Muğla's Districts.....	18
1.5. Sectoral Concentration Analysis of Muğla and Its Districts	23
1.6. Location Quotient Analysis of Muğla.....	30
1.7. Tourism Sector in Muğla	40
1.7.1. Competitiveness Analysis and Strategic Planning of Tourism Sector in Muğla.....	53

1.7.1.1. Firm Strategy and Competitive Structure (+/-).....	57
1.7.1.2. DemandConditions(+/-)	59
1.7.1.3. Input Conditions (+/-)	59
1.7.1.4. Related and Supporting Organizations (+/-)	62
1.7.2. Tourism-Focused Development Plans of Policy Makers	64

CHAPTER TWO

THE COMPONENTS OF TOURISM ECONOMICS

2.1. Overview of the Development of Tourism Analysis	66
2.2. Conceptual Framework: Understanding Tourism.....	69
2.3. Historical View of Tourism	82
2.4. Why is “Tourism” Important?.....	95
2.5. Economic Theory of Tourism	99
2.5.1. Macroeconomic Approach.....	99
2.5.2. Microeconomic Approach	100
2.5.2.1. Demand-Side Approach.....	102
2.5.2.2. Supply-Side Approach	110
2.5.3. Impacts of Tourism.....	113
2.5.3.1. Economic Impacts of Tourism.....	116
2.5.3.2. Social Impacts of Tourism	124
2.5.3.3. Environmental Impacts of Tourism	128

2.5.4. Tourism and Regional Development	131
---	-----

CHAPTER THREE

REMODELING TOURISM DEMAND USING OPTIMAL PREDICTORS

3.1. Introduction	137
3.2. Literature Review on Tourism Demand Factors	139
3.3. Methodology	141
3.4. Data and Sample	143
3.5. Empirical Results	148
3.5.1. Determining Optimal Independent Variables	148
3.5.2. Econometric Diagnostic Tests	151
3.5.3. Forward-Stepwised Heteroskedasticity-Serial Correlation Robust Pooled OLS Model	153
3.6. Conclusion	156

CHAPTER FOUR

CONSTRUCTING ENVIRONMENTAL, HISTORICAL AND INFRASTRUCTURAL COMPOSITE INDICATORS

4.1. Introduction	157
4.2. Theoretical Background of Constructing an Index	157
4.2.1. Developing Theoretical Framework for Composite Indicator.....	160

4.2.2. Selecting Variables	163
4.2.3. Imputation of Missing Data	164
4.2.4. Multivariate Analysis	165
4.2.5. Normalization	171
4.2.6. Weighting	174
4.2.7. Aggregation	177
4.2.8. Uncertainty and Sensitivity Analysis.....	179
4.2.9. Back to the Details.....	181
4.2.10. Visualization of the Results	182
4.3. Methodology	182
4.4. Data and Sample	187
4.5. Empirical Results	194
4.5.1. Environmental Composite Indicator.....	194
4.5.2. Cultural Composite Indicator	202
4.5.3. Infrastructural Composite Indicator.....	206
4.6. Discussion	210

CHAPTER FIVE

ENVIRONMENTAL, HISTORICAL AND INFRASTRUCTURAL COMPOSITE INDICATORS AS GROWTH FACTORS

5.1. Introduction	213
-------------------------	-----

5.2. Theoretical Background.....	213
5.3. Methodology and Data.....	218
5.4. Empirical Results	220
5.5. Discussion	224
CONCLUSION.....	226
REFERENCES.....	232
CV	255

LIST OF FIGURES

Figure 0.1. Annual Change in Tourist Flows, Population and GDP Per capita (%)....	2
Figure 1.1: Political Map of Muğla's Districts	9
Figure 1.2: Muğla-Türkiye Population Growth Rates (%)	12
Figure 1.3: Muğla Net Migration Rate.....	13
Figure 1.4: Muğla-Türkiye Expected Education Time (Years)	13
Figure 1.5: TR32 Region-Türkiye Unemployment Rates.....	14
Figure 1.6: Electricity Consumption per Capita (kWh).....	15
Figure 1.7: 'Türkiye İş Kurumu' Registered Unemployed Numbers in Muğla Province	16
Figure 1.8: Muğla-Türkiye GDP (\$) Per Capita Comparison.....	17
Figure 1.9: 2018-2022 Housing Unit (m2) Prices in US Dollars.....	18
Figure 1.10: Percentage GDP Distribution of Sectors in Muğla Province (NACE Rev. 2 Activity Codes, 2009 Base Year at Current Prices).....	24
Figure 1.11: Number of Foreign Tourists Entering through Muğla's Border Gates ..	41
Figure 1.12: Number of Foreign Tourists Arriving Türkiye.....	42
Figure 1.13: Overnight Foreign Tourist Spending Per Trip.....	44
Figure 1.14: Muğla/Türkiye Tourism Income Ratio (%).....	46
Figure 1.15: Total Foreigner Arrivals Visiting Muğla.....	47
Figure 1.16: Foreign Arrivals of Muğla by Nationality 2006 and 2008	49
Figure 1.17: Foreign Arrivals of Muğla by Nationality 2009 and 2010	50
Figure 1.18: Foreign Arrivals of Muğla by Nationality 2015 and 2016	51
Figure 1.19: Foreign Arrivals of Muğla by Nationality 2015 and 2016	51
Figure 1.20: Muğla-Türkiye Tourism Income Per Capita (\$).....	52
Figure 1.21: Share of Tourism Revenues in Muğla's GDP	53
Government.....	56
Figure 1.22: International Competitiveness Analysis of Tourism Sector in Muğla Province (Medium +/-).....	57
Figure 2.1: The Flow of Leisure-Economics of Tourism	78
Figure 2.2: The Flow of the Tourism System	80
Figure 2.3. Definon of Contribution of T&T	97

Figure 2.4: Total Contribution of T&T to GDP, 2023	98
Figure 2.5: The Choice of Purchasing a Package Holiday.....	107
Figure 4.1: The Flow of Designing Our Indicators.....	182



LIST OF TABLES

Table 1.1: Selected Variables for Identification of Muğla's Districts	19
Table 1.2: Selected Environmental, Sustainability, Historical and Cultural Indicators of the Districts, 2022	22
Table 1.3: Foreign Trade Data of Muğla, 2023, According to ISIC Rev.3 Level 1 (General Trade System) (\$).....	26
Table 1.4: Detailed Export Performance of Muğla, 2014-2023, (1.000 \$).....	27
Table 1.5: LQ Values and Implications	31
Table 1.6: LQ Analysis of Districts Referenced Muğla Province, 2014	32
Table 1.7: Broad Structure of NACE Rev. 2	33
Table 1.8: LQ Analysis of Districts Referenced Muğla Province, 2021	36
Table 1.9: Türkiye Travel & Tourism Competitiveness Index, 2023	43
Table 1.10: Muğla & Türkiye Foreign Tourist Expenditure (\$)	45
Table 1.11: Key Elements Defining Competitiveness in Tourism	54
Table 1.12: Tourism Focused Development Plans	65
Table 2.1. Tourism Research Fields.....	68
Table 2.2: Forms of Tourism and Categories Tourism Consumption	71
Table 2.3: Tourism Activities for Purposes	73
Table 2.4: List of categories of tourism characteristic consumption products	73
Table 2.5: Tourist Typology	75
Table 2.6: Technology Trends in Tourism Industry	80
Table 2.7: Determinants of Tourism Demand.....	104
Table 2.8: Special Features of Tourism Products and Services.....	112
Table 2.9: Positive/Negative Impacts of Tourism.....	114
Table 3.1: Variable Set Construction.....	145
Table 3.2: Determining Optimal Predictors via Stata 18.....	148
Table 3.3: Panel Data Unobserved Heterogeneity Specification Results	149
Table 3.4: Diagnostic Tests.....	152
Table 3.5: Liang-Zeger Clustered-Standard Errors Pooled OLS: Dependent Variable: ln(Foreign Arrivals)	154
Table 4.1: Pros and Cons of Composite Indicators.....	158

Table 4.2: Normalization Methods	172
Table 4.3: Monte Carlo Approach for Uncertainty Analysis.....	180
Table 4.4: Travel & Tourism Competitiveness Index Framework	183
Table 4.5: Environmental Performance Index Framework.....	184
Table 4.6: The Specifications of Variables	189
Table 4.7: Preliminary Tests of Factor Analysis.....	195
Table 4.8: Principal-Component Factor Analysis Method of Environmental-Sustainability Index.....	195
Table 4.9: Factor Analysis/Correlation and Weights of Environmental-Sustainability Unobserved Factors.....	196
Table 4.10: Rotated Factor Loadings (Pattern Matrix) and Unique Variances of Environmental Variables.....	197
Table 4.11: Normalized Squared Factor Loadings of Variables of Environmental Composite Indicator	198
Table 4.12: Weights of Environmental Composite Indicators.....	199
Table 4.13: Environmental Composite Indicator Scores	201
Table 4.14: Preliminary Tests of Factor Analysis.....	203
Table 4.15: Total Variance Explained by the Factors with Cultural Variables	203
Table 4.16: Rotated factor loadings (pattern matrix) and unique variances of Cultural Index.....	204
Table 4.17: Weights of Indicators of Cultural Index	204
Table 4.18: Cultural Composite Indicator Scores	205
Table 4.19: Preliminary Tests of Factor Analysis.....	206
Table 4.20: Principal-Component Factor Analysis Infrastructural Composite Indicator	207
Table 4.21: Rotated factor loadings (pattern matrix) and unique variances of Infrastructure Index.....	207
Table 4.22: Weights of Indicators of Infrastructure Index.....	208
Table 4.23: Infrastructural Composite Indicator Scores	209
Table 5.1. Correlation Matrix of Capital and Labor Variables	221
Table 5.2: Arellano and Bover/Blundell and Bond Two-Stage System Generalized Moments Robust Estimator Results: Dependent Variable: Ln(Overnight stays)	222

LIST OF ABBREVIATIONS

Abbreviation	Description
AIC	Akaike Information Criterion
BIC	Bayesian Information Criterion
CIC	Covariance Inflation Criterion
EKK	En Küçük Kareler
ERP	European Recovery Program
GDP	Gross Domestic Product
GEKA	Güney Ege Kalkınma Ajansı
GMM	Generalized Method of Moments
GMT	Genelleştirilmiş Momentler Tahmincisi
IATA	International Air Transport Association
ISIC	International Standard Industrial Classification of All Economic Activities
LSDV	Least Square Dummy Variable
LQ	Location Quotient
MTA	Maden Tetkik ve Arama
MUSKİ	T.C. Muğla Büyükşehir Belediyesi Su ve Kanalizasyon İdaresi Genel Müdürlüğü
NACE	Nomenclature des Activités Économiques dans la Communauté Européenne
NCMC	Non-compensatory multi-criteria analysis
OECD	Organization for Economic Co-Operation and Development
OEEC	Organization for European Economic Co-operation
OLS	Ordinary Least Square

SA	Sensitivity Analysis
SEGE	İlçelerin Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırması
TAI	Technology Achievement Index
TC	Türkiye Cumhuriyeti
TDGVA	Tourism Direct Gross Value Added
T&T	Travel Tourism
TTCI	Travel and Tourism Competitiveness Index
TURKSTAT	Türkiye Statistical Institute
TÜRÇEV	Türkiye Çevre Eğitim Vakfı
UA	Uncertainty Analysis
UNDP	United Nations Development Program
UNWTO	United Nations World Tourism Organization
USA	United States of America
WTTC	World Travel and Tourism Council

INTRODUCTION

The origins of travel activities date back to ancient times. Matias et al. (2011:3) highlight humanity's boundless quest for exploration by drawing a parallel to the Argonauts from Greek Mythology. The Argonauts braved the challenging and unfamiliar conditions of crossing the Bosphorus and sailing to the Black Sea in search of something. He describes modern tourists as contemporary argonauts. Christou (2022:12-27) emphasizes that travel practices in ancient history (9000 BC-AD 650) were carried out for religious, military, sporting competition and commercial purposes rather than tourism. In the Middle Ages, Muslims made pilgrimages to Mecca, and Christians traveled to Jerusalem and other holy places. In the 17th and 18th centuries, wealthy European youth visited historical sites in countries such as Italy, France and Greece as part of their art and culture education. The general name for these trips is the 'Grand Tour' (Zuelow, 2016). However, the beginning of the industrial revolution and the invention of steam engines made traveling by sea and rail a more social phenomenon. However, tourism became mass after World War II with the development of the aviation industry and the increase in the level of welfare.

The significance of the tourism sector in global economic activities is increasing. Economic factors, technological advances, curiosity about cultural and social differences, demographic factors are causing the increase in tourist activities. Globally, the annual change trend in GDP per capita, tourist flows (annual change of arrivals of tourists at all types of accommodation establishments) and population is similar in the last 13 years. Annual changes in all three variables are positive and show a stable trend (World Bank database, 2023; UNWTO database, 2023).

During this period, the annual increase in tourist flows is slightly higher than the population, while GDP per capita is over than both. However, the tourist flows series does not include excursionists and those staying in their own homes on holiday. The following figure shows the annual changes in tourist flows, population and GDP per capita:

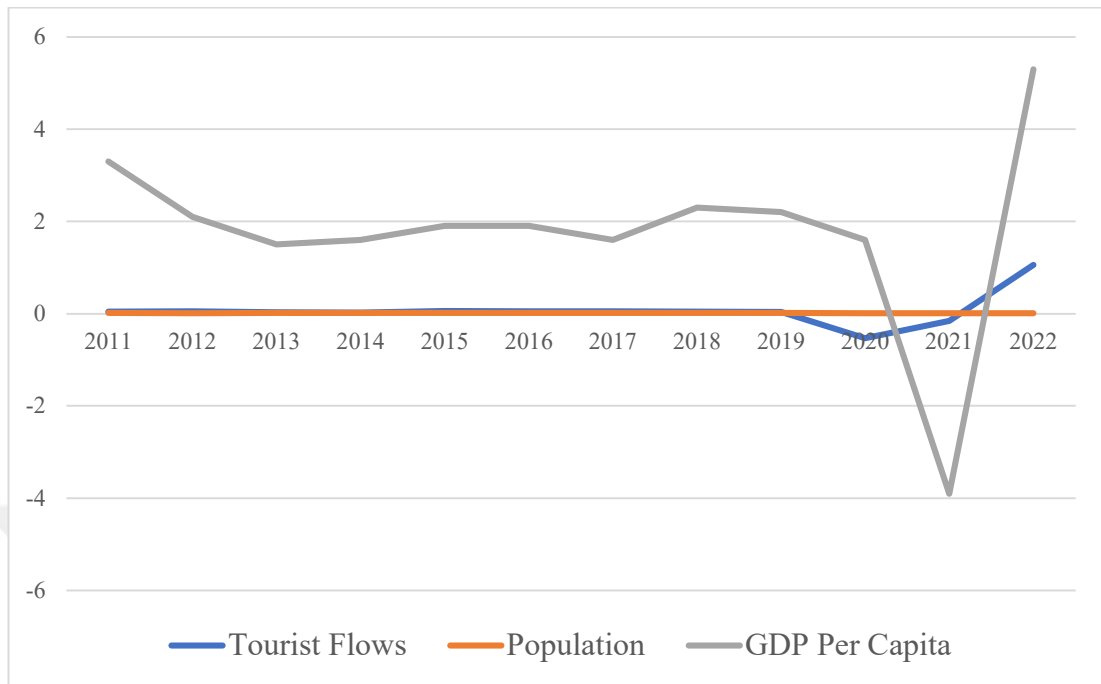


Figure 0.1. Annual Change in Tourist Flows, Population and GDP Per capita (%)

Source: Author's own illustration (based on World Bank database, 2023; UNWTO database, 2023)

When we deepen the analysis a little more in terms of economic factors, we see that the number of airline companies in the world has increased by approximately 120 and the number of commercial aircraft by 8,000 from 2014 to 2024 (IATA database, 2024). The competitive environment between companies also reduces ticket prices. Another economic factor, the increasing trend in public investments and megastructures, paves the way for middle and low-income countries to build airports at least in their capitals. Thus, the touristic appetite of people from relatively high-income countries increases due to purchasing power differences, living costs and Exchange rate differentials.

Technological advances have not only improved the aviation industry but also strengthened people's desire to discover different destinations through social media instruments. Consumers' access to travel and accommodation products has become much easier thanks to information technologies and digital platforms (e.g. Google Flight, Expedia, Airbnb, Booking). The decrease in working hours and the increase in

annual leaves in developed countries are also among the reasons for the increasing trend.

It is useful to emphasize the economic contribution of the tourism industry with some data. According to the latest report of WTTC (2024), the contribution of tourism to the global economy in 2023 is:

- 9,1% of global GDP (9.9 TN \$)
- 10% of global jobs (330 MN jobs).

The economic contribution of tourism is not limited to GDP and employment alone. Other contributions are listed below (WTTC, 2024; Dwyer et al. 2020):

- Revenue from taxes,
- Supply chain enhancement,
- Foreign Exchange earnings,
- Boost local businesses,
- Investments and infrastructure development.

The tourism sector has the potential to serve as the economic engine of a country, region, or city. Recently, there has been a noticeable trend where tourism has emerged as a significant component of countries' or regions' strategies for economic expansion and progress. Thailand has undertaken multiple tourism-focused development initiatives, such as the advancement of cultural tourism, ecotourism, and beach resorts (see “Amazing Thailand” campaign). Spain has made significant infrastructure investments to increase tourism earnings in coastal areas and popular destinations (Barcelona, Madrid and the Balearic Islands). Maldives, known for its luxury resorts and pristine beaches, also sees tourism as one of the primary sectors in their economic development. Rwanda has placed tourism as a top priority in its strategy for growth after the conflict, with a specific emphasis on wildlife tourism, cultural tourism, and eco-tourism. Costa Rica has adopted ecotourism as a method for sustainable development, actively marketing its abundant biodiversity and natural attractions. The government has undertaken steps to create national parks, designated areas for conservation, and environmentally-friendly accommodations. The United

Arab Emirates, especially Dubai and Abu Dhabi, have made gigantic amounts of investments in the development of tourism infrastructure, comprising ultra-luxury hotels, expansive retail centers, amusement parks, cultural landmarks and many things that can attract the attention of tourists and make their travel easier. When formulating policies for the tourism industry, it is crucial to possess the ability to precisely assess socio-economic achievements and adhere to a robust methodology. Developing the suitable approach for academic academics seeking to quantify the effects of tourism is a highly challenging task. When assessing the tourism industry, it is important to consider factors such as the country's balance of payments, the influence of regional growth on excess income and unemployment, and the generation of public money.

Muğla, one of the most significant cities in Türkiye in terms of touristic activity, economy and environment, hosts near 3.000.000 inbound tourist (from Muğla's border and customs gates) a year and generates an annual tourism revenue of approximately \$2.000.000.000 from inbound tourists (Muğla Culture and Tourism Provincial Directorate dataset, 2023). The share of Muğla's direct foreign tourism expenditures in Türkiye's total is approximately 7% and the tourism GDP of Muğla constitutes approximately 30% of Muğla total (Muğla Culture and Tourism Provincial Directorate, 2023; TURKSTAT, 2023).

The main research problem is that environmental and cultural elements of Muğla should have an important place in tourism demand modeling. In addition, environmental and cultural assets of each individual district can be converted into numbers with quantitative methods. In fact, in the vast majority of studies analyzing tourism demand (see Brida & Risso, 2009; Gonzalez & Moral, 1995; Liu et al., 2020), economic variables are used as estimators while environmental, cultural and social factors are ignored. One of the main objectives of the study is to create three different composite indicators for environmental, cultural and infrastructural of Muğla and to attribute index scores to the districts in these three subgroups. Afterwards, it is aimed to analyze whether the natural environment, cultural assets and infrastructure are tourism growth factors by integrating the obtained scores with the capital and labor variables in accordance with a growth theory.

The first chapter presents the stylized facts of Muğla and its districts. After briefly mentioning its geography, history and economy, the sectoral concentrations (specializations) in the districts and the changes over the years are shed light on the number of insured employees with the 'Location Quotient' analysis method.

In the next section, the tourism economics is examined from conceptual and historical perspectives, respectively. Then, the macroeconomic metrics and measures of tourism are defined. In addition, due to the practices employed in the dissertation related to the demand of tourism in the study, how tourism demand is theorized in the light of Consumer Theory is examined.

The part that makes the dissertation different from the literature starts from Chapter 3. Despite the topographical, biological, demographic, and economic disparities among the thirteen districts of Muğla, all but two possess coastlines. In the area where the Aegean and Mediterranean converge, certain districts are situated along the Aegean shore, and others are positioned along the Mediterranean coast. However, the arrival of the masses to Muğla, the environmental degradation that will follow, and the subsequent expenditures to correct the environmental degradation may bring Muğla back to where it started. Therefore, one of the purposes of the study is to develop a demand model including environmental, cultural and infrastructural variables at the district level of Muğla and to determine the optimal estimators. Panel data methods are applied. Time spans from 2014-2021. Via the stepwise method, variables are added to the model respectively according to their individual statistical significance and contribution to the fitness of the model. The methodology is quite different from its counterparts in the 'tourism demand' literature. In most studies analyzing tourism demand factors, economic variables are emphasized while social, environmental, cultural and infrastructural variables are neglected. The main reasons for this may be the difficulties in accessing data that will proxy non-economic variables and/or the problems encountered in normalizing the obtained data. In this study, these difficulties are overcome with the data obtained from local government institutions; in the light of studies conducted with international data, the aim is to provide policy makers with intuitions on resource allocation.

Another aim is to convert the environmental, cultural and infrastructural assets of Muğla's districts into index scores by using the data reduction statistical method. In Chapter 4, three different composite indicators are created. Composite indicators (also known as index) have become an area of increasing interest in the academic world since the 2000s because they can bring together complex multidimensional realities, provide the opportunity to compare the performances of countries, and facilitate the analysis of their progress over time. Since 2000, many articles and books containing theoretical and practical elements have been written about creating indexes (e.g. Saltelli, 2002; Saltelli et al., 2004; Saltelli, 2007; Saltelli et al., 2008; Saisana M. & Tarantola, 2002; Saisana et al., 2005; Sharpe, 2004). Nardo et al. (2005) systematizes the stages of creating an index with examples. Afterwards, Nardo et al. (2008) created a handbook in this field and it is a guide for the studies to be done later. In terms of environmental, cultural and infrastructural variables that can be used while creating the index, inspiration is taken from the World Economic Forum's (2023) 'Travel & Tourism Competitiveness Index', which is a guide for measuring the tourism competitiveness of countries, and Wolf et al. (2022) 'Environmental Performance Index' studies. In grouping and weighting the data into factors, the 'principal-component factor analysis' method, one of the multivariate data analysis is used. In this way, policy makers will be able to evaluate the differentials of performances of the districts in line with the indices and will be able to have information about the strengths and weaknesses of the districts. The scores obtained prepare the ground for the next section. In fact, in the last section, three different indices are analyzed as a growth factor in the tourism growth model.

There are studies that model the growth in the tourism economy and present hypothetical results (see Lozano et al., 2008; Cerina, 2012). In these studies, environmental quality is evaluated as a production factor in tourism economy. In Chapter 5, unlike these studies, in addition to the 'environmental' variable, cultural and infrastructural indices are also included in the model as growth factors. The Solow-Swan exogenous growth model (Solow, 1956; Swan, 1956) is employed. While the longitudinal dataset is used in the empirical stage; the cross-section is again the districts of Muğla and the vertical section is the time period 2014-2021. The Arellano-

Bover/Blundell-Bond (system GMM) estimator is employed because it solves the endogeneity, heteroskedasticity, serial correlation within groups, time invariant heterogeneity problems. In addition, it can include the autoregressive process of the dependent variable in the model.



CHAPTER ONE

STYLIZED FACTS OF MUĞLA: ECONOMICAL, SOCIAL, CULTURAL, ENVIRONMENTAL AND TOURISM ASPECTS

1.1.Introduction

Muğla, which became a metropolitan municipality in 2014, has thirteen districts. Looking at these thirteen districts; different geographical, topographic and even climatic features are observed. While coastal districts have an intense tourism sector, inland districts are agriculture-intensive. Muğla is an important tourism city with its unique nature, which is influenced by the Mediterranean climate. The average sunshine duration was calculated as 7 hours and 48 minutes. The humidity rate was 61%, the average precipitation was 1196 mm, the number of rainy days was 98, the number of snow-covered days was 1,6 and the number of frosty days was approximately 34. Rich in forest rate, and an important agricultural city due to its rural population and ecological advantages. The effect of the sea and surface forms also play an important role in the climate characteristics of the region. It has an ecology where many products produced in our country can be grown with suitable climate and soil structure. Muğla which has coastline length of 1.500 km is the province that has Türkiye's longest coastline.

transitions to the tourism sector. The final section of the analysis concentrates on the evaluation of Muğla's environmental and cultural data.

1.2.History of Muğla

Muğla is one of the oldest settlements in the Ancient Caria Region and was under the rule of Caria, Egypt, Scythia, Assyria, Dor, Med, Persian, Macedonian, Roman and Byzantine respectively. Muğla, formerly known as "Mobella, Mobolia, Moğola" in various findings and sources, began to be referred to as Menteşe after it came under the rule of the Menteşe Principality in 1284 (Muğla Governorship, 2023).

The region was annexed to the Ottoman territories by Yıldırım Beyazıt in 1391, came under the rule of Timur in 1402, and was subsequently returned to the Menteşe Principality by Timur. Later, in 1425 during the reign of Sultan Murat II, the Menteşe region fully came under the sovereignty of the Ottoman Empire. During the time of the Menteşe dynasty, they ventured to the coasts and islands of Greece and Muğla, and temporarily gained control over the island of Rhodes. The Knights of Saint John, who settled on the island of Rhodes during this period, engaged in battles with the Ottomans and the Menteşe dynasty, and also maintained control of Bodrum Castle for a period of time. However, in 1522, both the island of Rhodes and Bodrum Castle were annexed to the Ottoman Empire by Sultan Suleiman the Magnificent. The center of Muğla province was Milas during the “Menteşe Beyliği” period; Muğla became the center during the Ottoman Empire era. There are different opinions about the origin of the name "Muğla". According to the most common rumor, the name of the city is said to originate from the name of "Muğlu" Bey, one of the commanders of Seljuk Sultan Kılıçarslan. It is most likely that this commander's name was given to this place because Muğlu Bey conquered it, and with time, "Muğlu" transformed into Muğla. The name "Mobölla" seen in the “1889 Aydın Vilayet Salname” is the medieval name of the city. After being defeated in World War I, the territories of the Ottoman Empire were divided by the Allied Powers, and on May 11, 1919, Muğla was occupied by Italy. During the occupation of Anatolia, the "Kocahan Mitingi" was organized in Muğla, and it was declared that Muğla, like all other cities in Anatolia, would resist these occupations. As a result, resistance committees such as “Vatan Müdafaa

Cemiyeti, Serdengeçtiler Müfrezesi, and Muğla Kuvayi Milliyesi” were established in the city. The city, which sent 6 deputies to the first term parliament opened in Ankara in 1920, participated in resistance activities against the Greek occupation that started along the Menderes River, taking advantage of the limited influence of the Italians in the city. In Muğla, three congresses were held before the War of Independence, and delegates were also sent to the Erzurum and Sivas congresses (Muğla Governorship, 2023).

The first communication between the people of Muğla and Gazi Mustafa Kemal Atatürk begins with the telegram of loyalty sent by Muğla to Mustafa Kemal Pasha before the October 1919 Congress held for Sivas, and the response filled with praise given by Pasha to this telegram. During the War of Independence, Atatürk successfully established his position through congress and resistance movements, and during the same years, he personally raised highly distinguished individuals who helped him establish the Republic. During the War of Independence and the Republican era, distinguished individuals from Muğla such as General Mustafa Muğlalı, Journalist Yunus Nadi, Agricultural Engineer Zihni Derin, Governor Hilmi Uran, Lawyer Şükrü Kaya, and Veterinarian Ahmet Şefik Kolaylı actively supported Atatürk. Muğla has become the province in the Aegean region that has suffered the most number of casualties, with 1,444 martyrs, during the War of Independence (Republic of Türkiye Muğla Governorship, 2023).

Muğla, which came under Ottoman rule in 1451, gained provincial status in 1923 with the declaration of the Republic (Republic of Türkiye Muğla Governorship, 2023).

1.3. Economical and Sociological Overview

Considering the population of Muğla, it is seen that net migration has been positive every year since 2007. At the same time, since the total fertility rate of immigrants is relatively higher, the linear increase in the population can be considered normal. Population growth is linear, that is, the rate of increase does not change.

When looking at the population growth rate of Muğla, it can be observed that it has consistently exceeded that of Türkiye throughout the past decade. Although Türkiye is seeing a significant influx of migration due to political uncertainties in the Middle East, its population growth rate has been approximately one-third in some years. The factors that affect the population growth rate for provinces are net migration and crude birth rate. The population growth rate generally tends to be twice the level of net migration rate. The population growth rate in Muğla is influenced by two factors. This indicates that Muğla is an economically, socially, and geographically attractive region, and that the natural population growth exceeds the mortality rate.

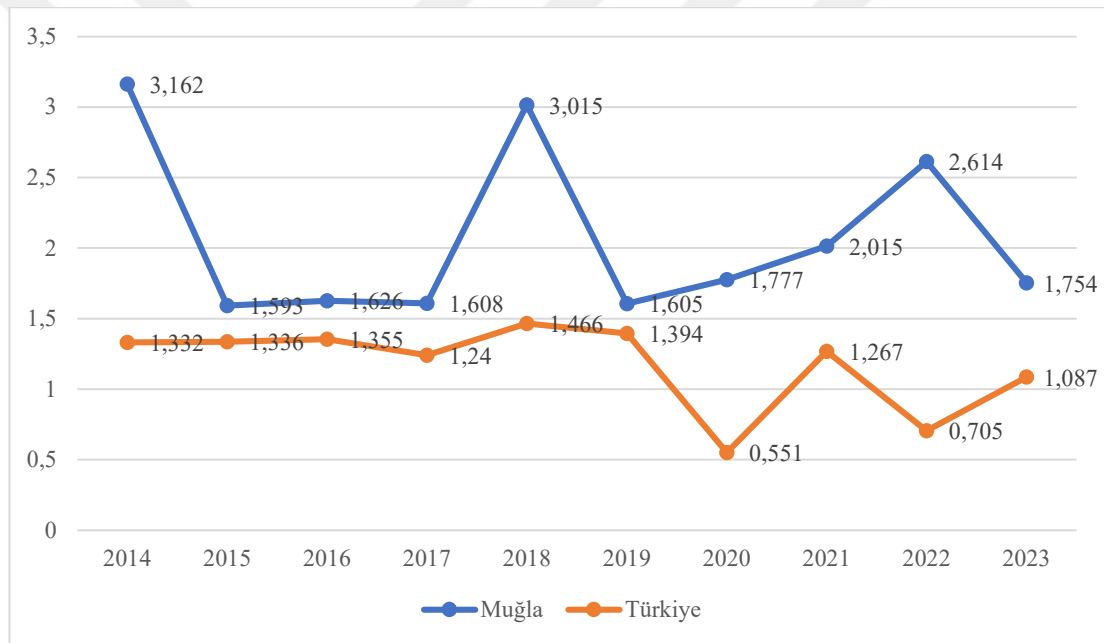


Figure 1.2: Muğla-Türkiye Population Growth Rates (%)

Source: Author's own illustration (based on TURKSTAT, 2024).

Muğla is the 5th province with the highest net migration rate in Türkiye due to its sociological, ecological and geographical advantages (TURKSTAT, 2024). Although the city in the top place changes over the years, Muğla mostly maintains its place in the top five.

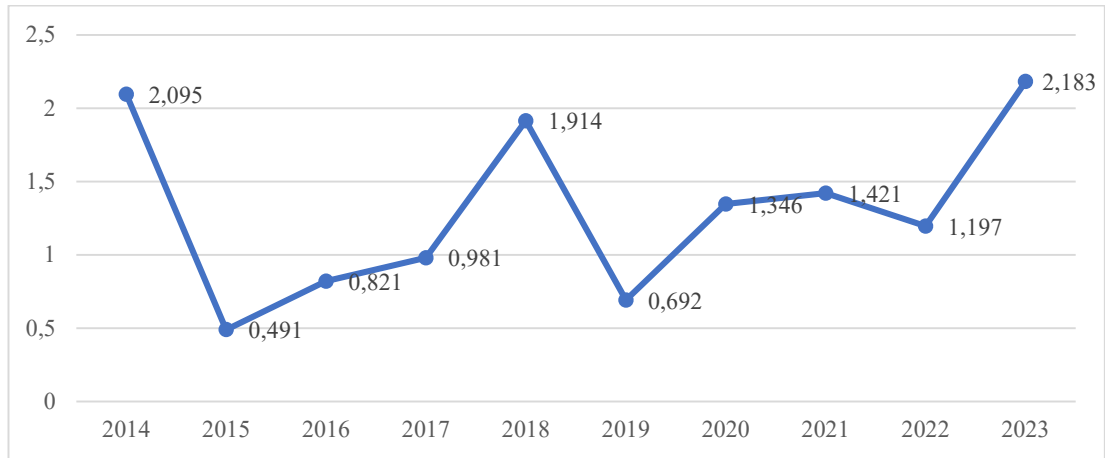


Figure 1.3: Muğla Net Migration Rate

Source: Author's own illustration (based on TURKSTAT, 2024).

Upon analyzing the expected time frame of education, it becomes evident that the educational period for the inhabitants of Muğla exceeds the national average in Türkiye. One possible explanation for this could be the convenient availability of educational institutions. Alternatively, the favorable economic conditions experienced by the population may have eradicated the necessity of early employment. Consequently, it may be inferred that the socio-cultural level of the residents above the average level in Türkiye.

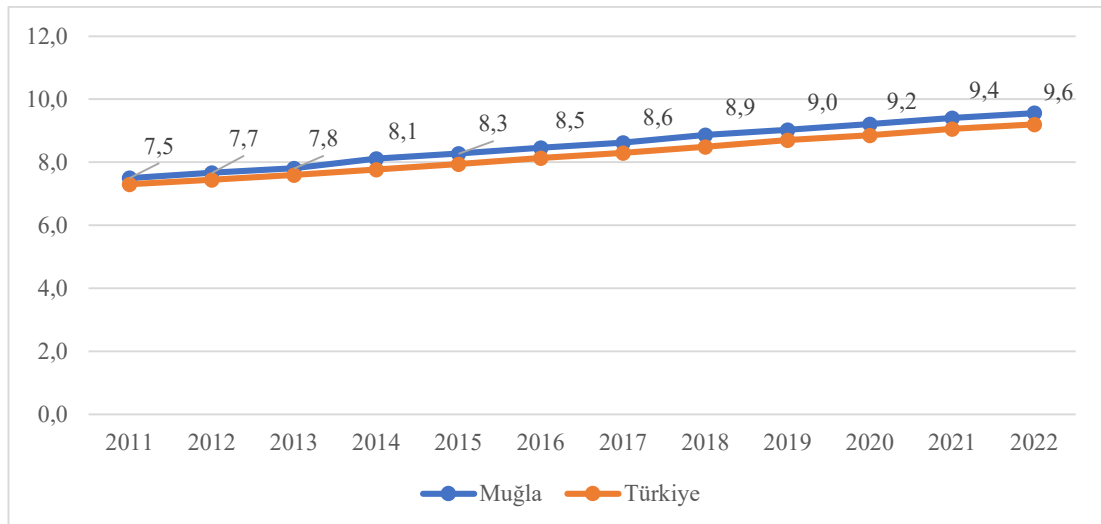


Figure 1.4: Muğla-Türkiye Expected Education Time (Years)

Source: Author's own illustration (based on TURKSTAT, 2024).

Upon examining the series, it becomes evident that the unemployment rates in the TR32 region, which encompasses Muğla, are comparatively lower than those in Türkiye. Without a doubt, the impact of Muğla's natural riches and the allure of its natural beauty play a significant role in these numbers. The presence of agriculture, including crops such as figs, cotton, chestnuts, and olives, as well as agricultural-based industries in Aydın, and the concentration of industrial and textile sectors in Denizli, contribute to a comparatively lower unemployment rate in the region.

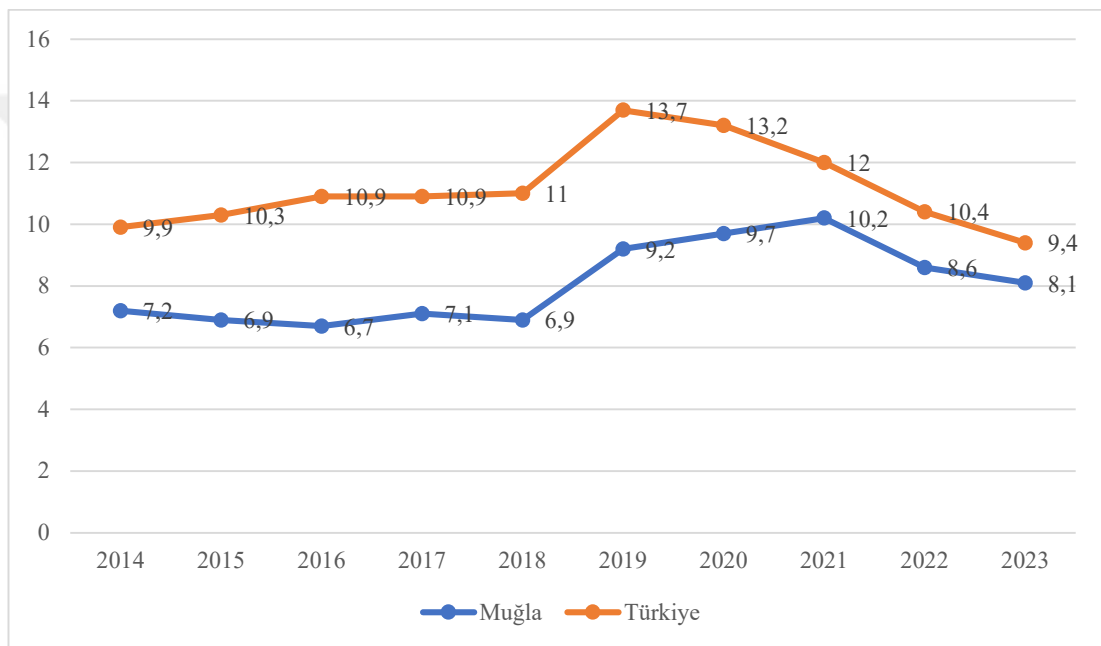


Figure 1.5: TR32 Region-Türkiye Unemployment Rates

Source: Author's own illustration (based on TURKSTAT, 2024)

It is seen that Muğla is well above the Turkish average in household electricity consumption per capita. This can generally mean that the level of welfare and income is high. It is also an indicator that the density of electric comfort devices, heating and cooling machines is high.

When we look at the electricity consumed in industry, it is seen that it is around 1000 kWh lower than the country average. Considering that the majority of the economic activities in Muğla are tourism, construction, fishing and marble sectors, it is not surprising that the electricity consumption per capita in industry is low.

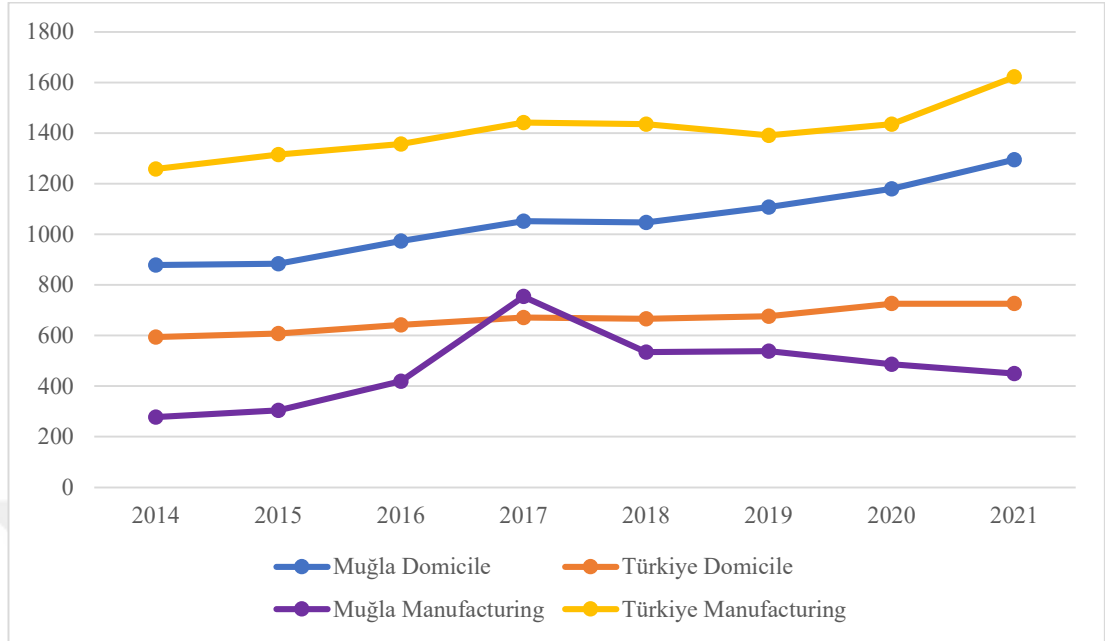


Figure 1.6: Electricity Consumption per Capita (kWh)

Source: Author's own illustration, (based on TURKSTAT, 2023)

Although the regional employment data cannot be accessed, when we look at the number of unemployed registered with Türkiye İş Kurumu, we see that the number of unemployed registered with Türkiye Cumhuriyeti İş Kurumu¹ doubled from 2015 to 2018. This can be considered as an indicator of the vulnerability of the Muğla economy to political shocks². In addition, it would not be wrong to say that the effects of the political shocks experienced show themselves with a delay of 1 year. However, while the COVID-19 epidemic caused great damage to most of the countries' economy, it did not cause any disruption in the labor market in Muğla, and unemployment applications in Muğla decreased in 2019 and 2020.

¹ The aim of this institution, affiliated with the Ministry of Labor and Social Security, which was established in 1946, is 'to find jobs suitable for workers' qualifications and for employers to find workers with suitable qualifications for their jobs.'

² Türkiye-Russia plane crisis (2015) and 15th July coup attempt (2016).

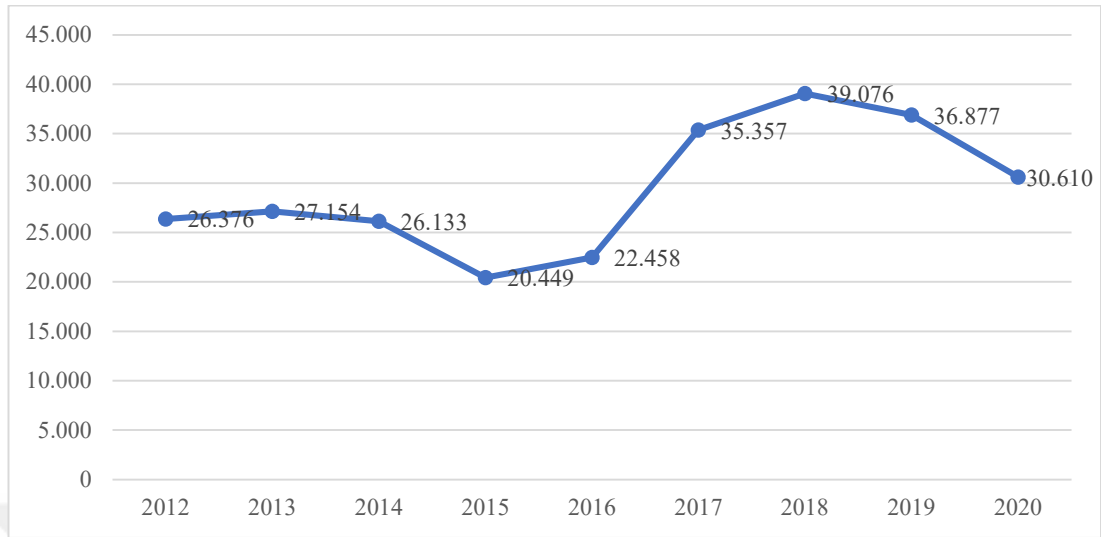


Figure 1.7: ‘Türkiye İş Kurumu’ Registered Unemployed Numbers in Muğla Province

Source: Author’s own illustration (based on İŞKUR, 2022).

It is seen that the GDP per capita of Muğla and Türkiye increased until 2013 (except the year after the 2008 Global Financial Crisis). It is seen that Türkiye's GDP, which was approximately 957.5 billion \$ (current prices) in 2013, decreased to 692.4 billion \$ (current prices) by 2022 (IMF Country Economic Outlook, 2022). Between 2004-2013, Muğla's GDP per capita is 10%-15% higher than Türkiye's. After 2013, GDP per capita of both Türkiye and Muğla shows a decreasing trend. Since 2013, GDP per capita of Türkiye and Muğla has been close to each other. Even in 2016, 2017 and 2020, it is seen that the value of Muğla remained below that of Türkiye. Undoubtedly, this change in the GDP trend of Muğla-Türkiye per capita depends on many parameters. However, the plane crisis with Russia on November 24, 2015, the coup attempt of the terrorist organization FETO on July 15, 2016 and the decrease in Türkiye's per capita GDP are the main reasons for this change in trend.

Muğla's economy is heavily dependent on the tourism sector, both inbound and domestic. After the plane crisis with Russia, naturally, the Russian-Turkish diplomacy weakened and the tourism activities between Russia and Türkiye decreased to zero for a while. Considering the nationalities of those who travel to Muğla, the number of Russians is relatively high (see Ministry of Culture & Tourism Inbound Tourism Data, 2022). The decreasing trend in Türkiye's GDP per capita undoubtedly negatively

affects the domestic tourism consumption in Muğla, whose economy is heavily dependent on tourism. While the decrease in income per capita does not have a big impact on the Turkish economy, where tourism occupies a relatively smaller place, it should not be surprising that Muğla's economy, which is largely dependent on tourism, has a greater impact on its total economy.

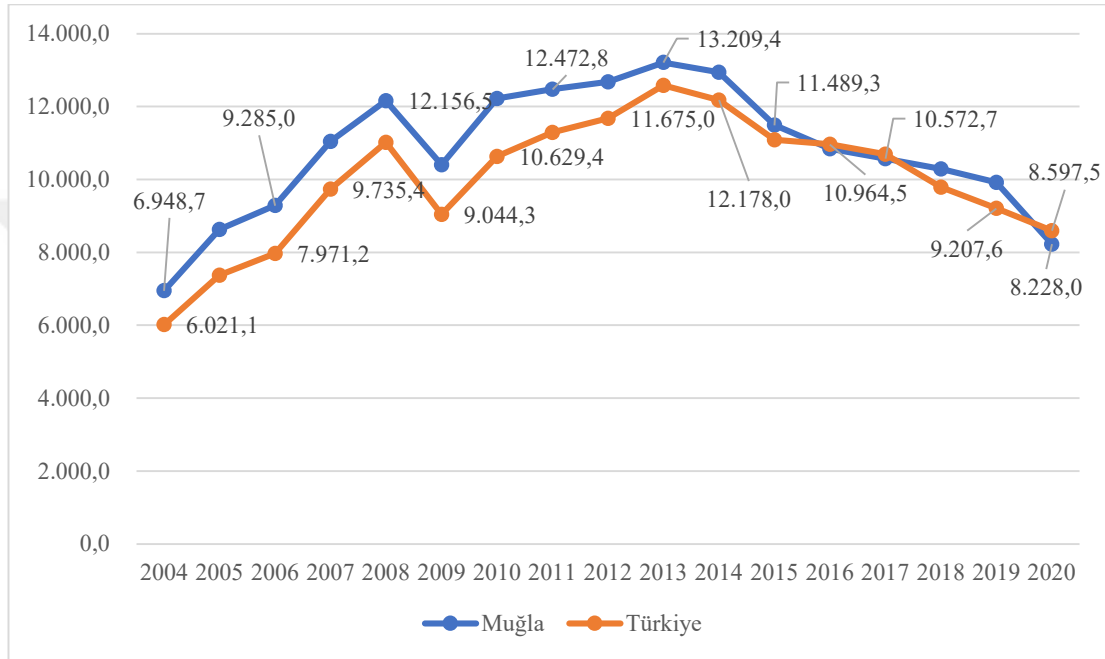


Figure 1.8: Muğla-Türkiye GDP (\$) Per Capita Comparison

Source: Author's own illustration (based on TURKSTAT, 2022)

The figure below shows the time graph of Muğla's housing unit (m2) prices. Unit housing prices in the region since 2019 went through a significant rise. In an environment where GDP per capita is decreasing and prices are stable throughout Türkiye, the increase in housing prices in Muğla is an indication that it is a region with high demand.

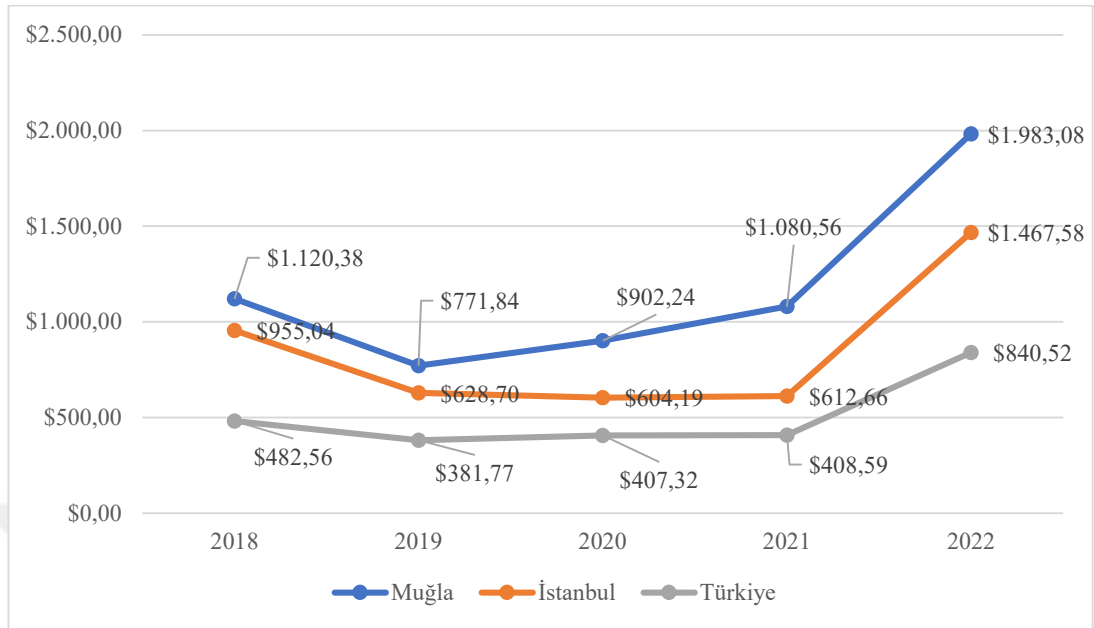


Figure 1.9: 2018-2022 Housing Unit (m2) Prices³ in US Dollars

Source: Author's own illustration, (based on Endeksa, 2023).

The COVID-19 pandemic is undoubtedly increasing the demand for adjacent to the natural environment assets. In particular, the fact that companies use the method of working from home more intensively causes the attractiveness of metropolitan life to decrease. Unit housing prices in Muğla reach \$ 1938 by 2022. This amount is approximately 30% higher than the average of İstanbul and 130% higher than the average of Türkiye.

1.4.Characteristics of Muğla's Districts

On the following table, selected variables that constitute the identity of Muğla's districts.

³ July price average is used in the chart.

Table 1.1: Selected Variables for Identification of Muğla's Districts

	Acreage (km ²)	Population	Coastal Length (km)	Intellectuality Rate Per Capita *	Population Density (person/km ²)	Insured Entrepreneur	Population Density (person/km ²)	Number of Business Per Capita	Forest Density	Farmland Density	SEGE 2022 District Ranking	Accommodation Bed Capacity
Bodrum	681,013	187.284	174	1,553	275,008	9.452	275,008	0,05047	0,2108	0,18309	1	74.057
Dalaman	606,099	44.386	90,06	1,405	73,2323	802	73,2323	0,01807	0,28329	0,19798	8	666
Datça	416,817	24.519	235	1,611	58,8244	781	58,8244	0,03185	0,21189	0,06647	5	8.959
Fethiye	1.135,21	170.379	167	1,379	150,086	6.043	150,086	0,03547	0,49313	0,10541	4	28.248
Kavaklıdere	365,446	10.842	-	0,788	29,6679	230	29,6679	0,02121	0,62688	0,08364	12	-
Köyceğiz	1.372,49	38.425	5,5	1,179	27,9965	601	27,9965	0,01564	0,41205	0,07483	10	1.984
Marmaris	918,695	95.849	451	1,585	104,332	4.283	104,332	0,04468	0,33298	0,01874	2	51.901
Menteşe	1.586,18	118.443	17,09	1,705	74,672	3.502	74,672	0,02957	0,29292	0,14666	3	1.969
Milas	2.071,55	145.275	197,4	1,119	70,1288	3.405	70,1288	0,02344	0,23804	0,32561	7	5.053
Ortaca	295,281	52.929	32	1,351	179,25	1.355	179,25	0,0256	0,18989	0,23259	6	6.521
Seydikemer	1.861,25	61.427	10	0,681	33,0031	262	33,0031	0,00427		0,17058	13	129
Ula	481,485	26.306	33	1,316	54,6351	553	54,6351	0,02102	0,35613	0,11683	9	2.485
Yatağan	768,615	45.077	-	1,084	58,647	1.077	58,647	0,02389	0,25058	0,27401	11	59

*Note: $Intellectuality\ rate\ per\ capita = \frac{\sum_{i=1}^n y_i \cdot k_i}{Total\ population\ of\ district}$ where T represents the total years of schooling in the society, n is the number of people receiving post-compulsory education, y_i is the duration of education of the i -th person (in years), k_i represents the education received by the i -th person (indicates the person, usually represented by 1, or considered as 1 if this person is receiving education, 0 if not).

Source: Author's own illustration (Dalaman District Governorship, 2023; Datca Municipality, 2021; Fethiye Chamber of Commerce and Industry, 2007; Köyceğiz Provincial Directorate of Environment, Urbanization and Climate Change, 2024; Marmaris District Governorship, 2022; Menteşe District Governorship, 2022; Milas District Governorship, 2024; Muğla Provincial Directorate of Culture and Tourism, 2022; Ula District Governorship, 2024; Global Forest Watch, 2021; UNESCO World Heritage Convention, 2023; TURKSTAT, 2021; Republic of Türkiye Ministry of Culture and Tourism, 2021; Muğla Social Security Institution Directorate, 2021.)

It is seen:

- The largest district in terms of surface area is Milas, and the smallest district is Ortaca,
- The population registered to the address is the highest in Bodrum and the lowest in Kavaklıdere,
- The greenest district of Muğla is Fethiye, and the least green district is Ortaca.
- Milas has the longest coastline, Yatağan and Kavaklıdere do not have a coast to the sea,
- The district with the highest number of insured workers and businesses is by far Bodrum, while the district with the lowest number is Seydikemer. However, another reason for the low number of insured workers in Seydikemer, which is more crowded than some districts of Seydikemer in terms of population, is the abundance of small-scale family agricultural enterprises in the district.
- In terms of population density, we see that Bodrum and Fethiye are high, while Köyceğiz and Kavaklıdere are low.
- As an economic enterprise, we can say that Bodrum and Marmaris are ahead, while Seydikemer and Dalaman are behind. Dalaman's per capita business data is not surprising. Because we can guess that most of the insured employees work at the airport and in the paper mill.

- The forest density of Ortaca and Datça is quite low. Another district, Bodrum, which ranks first in economic data, has a low forest density.
- As for the agricultural land density, we see that Milas and Ortaca come to the fore. Undoubtedly, the olive groves of Milas have an important share. However, is it the profitability of the agricultural products produced by olives or the fact that the olive groves are protected by law? We are not sure of the answer to this question. Ortaca, on the other hand, produces citrus, watermelon, melon, tomato and pomegranate intensive agricultural production. We see that Marmaris has the lowest rate. In Marmaris, the tourism industry has a high comparative advantage over agriculture. Its natural assets are suitable for earning high income from tourism. However, beekeeping activities in Marmaris are quite high. Between 2500-3000 tons of honey is produced annually last 5 years (Turkish Statistical Institute, 2022).
- T.C. Kalkınma Ajansları Genel Müdürlüğü (2023) illustrates that Bodrum, Marmaris and Menteşe are the first three districts in terms of economic and sociological development level; the last three districts are Seydikemer, Kavaklıdere and Yatağan.

The table below displays selected environmental, sustainability, historical and cultural variables. The reason for displaying these variables is so that the reader can judge the districts with their natural and cultural assets.

Table 1.2: Selected Environmental, Sustainability, Historical and Cultural Indicators of the Districts, 2022

	No. of Blue Flag Beaches	Purified Water (1000 m3)	Groundw ater Reservoir (m3)	Meadow and pasture Area (m3)	Endemic Biod. Invent.	Renew. Energy (1000 kWh)	Historical and Archeolog ical Sites	Arch. Site Areas (km2)	Nat. Site Areas (km2)	Marine Biome Protection Area (km2)	National Nature Parks	UNESCO Heritage Places	Tree Cover (km2)	Agric. Landscape (km2)
Bodrum	55	12.071	10	2.513	4	118.569	25	80,72	101,613	0	0,32	1	186,1	124,68
Dalaman	0	5.024	0	10	4	323.782	3	57,24	23,5512	0	0	0	206,2	119,99
Datça	9	1.859	13	47	5	142.691	1	41,72	18,6302	368,16	0,04	0	159,8	27,707
Fethiye	10	11.519	20	77	12	75.627	17	29,96	118,201	340,11	0,655	3	592,2	119,66
Kavaklıdere	0	Na	0	24	3	0	1	28,64	0	0	0	0	147,3	30,567
Köyceğiz	0	1.513	0	112	7	0	1	27,02	0	20,42	0	1	591,6	102,70
Marmaris	22	14.002	0	9	10	0	18	26,05	339,421	368,16	295,12	0	296,3	17,217
Menteşe	0	3.355	30	170	4	209.105	3	10,18	135,841	0	0	0	525,1	232,62
Milas	3	3.772	56	2.031	6	61.623	15	7,01	22,1548	0	122,81	2	550,4	674,51
Ortaca	6	6.655	80	231	9	0	1	6,32	7,79949	20,42	0	1	59,73	68,679
Seydikemer	0	173	0	10.032	6	182.047	3	6,11	43,9828	14,65	16,03	3	631,5	317,49
Ula	1	911	0	59	4	45.720	2	1,37	439,200	819,35	0	0	185,1	56,25
Yatağan	0	1.051	11	521	2	0	2	0,75	0,26436	0	0	1	228,7	210,61

Source: Author's own illustration (based on TURKSTAT, 2024; TÜRÇEV, 2022; MUSKI annual reports, Republic of Türkiye Ministry of Culture and Tourism; Republic of Türkiye Ministry of Environment, Urbanization and Climate Change 2023; Republic of Ministry of Agriculture and Forestry, 2023; Muğla Metropolitan Municipality, 2023; Enerji Atlası, 2022; Global Forest Watch, 2022).

Despite being ranked fourth in terms of coastline length, Bodrum takes the top spot in terms of the number of blue flag beaches. Seydikemer, Milas, and Fethiye have the most tree covered area (km²) districts, in that order. Milas and Seydikemer have a significant advantage in terms of agriculture, resulting in the presence of extensive rural areas in both districts. The biodiversity inventory of Fethiye and Marmaris is extensive. Fethiye and Marmaris have distinctive natural characteristics and a high level of biodiversity. There is a clear association between the abundance of natural site areas, national parks, and biome protection zones in Marmaris and the biodiversity in the district. Seydikemer is notable for having the most expansive grassland and meadow. Additionally, this district experiences the highest level of intensity in small and large cattle breeding operations. Dalaman and Menteşe are leading in the production of renewable energy (measured in kilowatt-hours), which is a key component of environmental sustainability. The Dalaman Stream is considered one of the top three significant streams in Muğla due to its high flow rate and considerable length. Dalaman is elevated in renewable energy generation due to the construction of hydroelectric power stations on its premises. The wind power plants and licensed and unlicensed solar power plants situated in Menteşe contribute to Menteşe's ranking as the second highest producer of renewable energy. Bodrum and Fethiye excel in terms of the volume of filtered water (m³), which is a significant measure of environmental sustainability.

1.5. Sectoral Concentration Analysis of Muğla and Its Districts

In the chart below, the share of sectors in GDP between 2004-2020 is shown as a percentage. Sectors are defined according to 'NACE Revision 2'⁴ codes. The sectors that have a relatively more important share are given in the chart. The letters in parentheses refer to the NACE Revision 2 codes covered by the industry.

⁴ NACE Codes refers to statistical classification of economic activities which constituted by European Community. The official website can be visited to review the methodology and details: <https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>

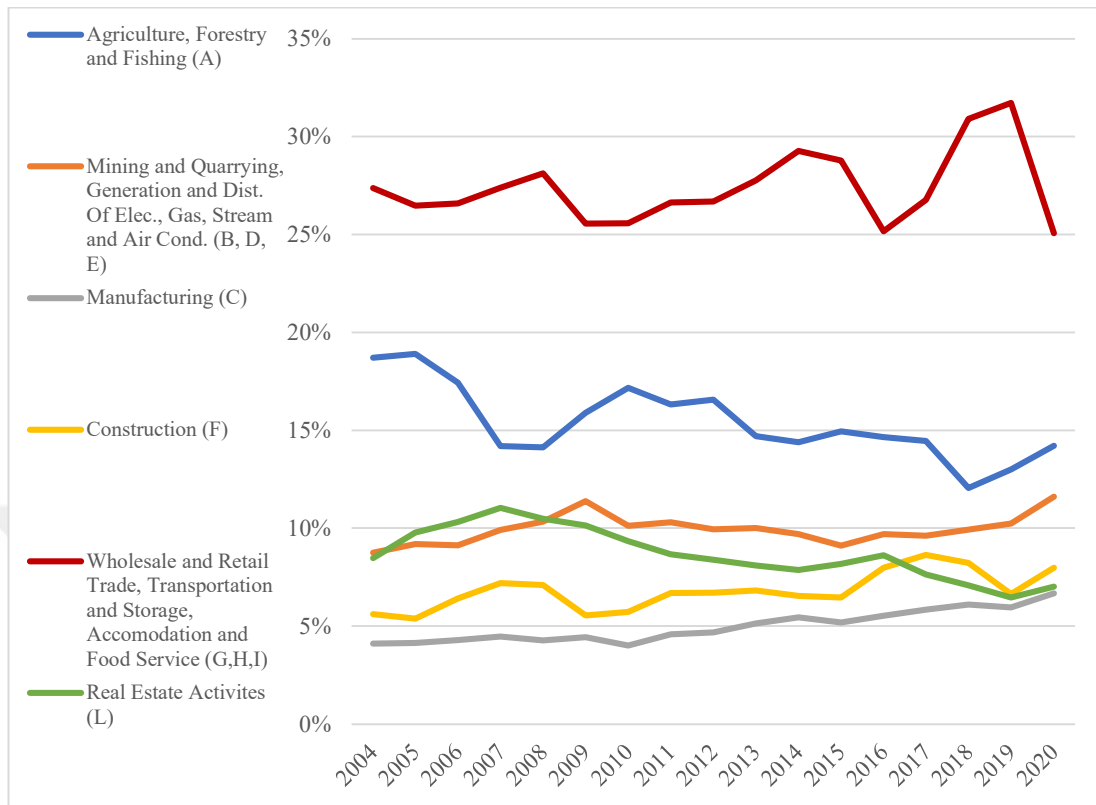


Figure 1.10: Percentage GDP Distribution of Sectors in Muğla Province (NACE Rev. 2 Activity Codes, 2009 Base Year at Current Prices)

Source: Author's own illustration (based on TURKSTAT, 2022)

Muğla has a relative abundance in agriculture (including animal husbandry and fishing) and tourism sectors in terms of resources. Having 1.500 km of Aegean coastline, the presence of the Mediterranean climate, the abundance of inputs in the service sector, the fact that more than one location on the UNESCO heritage list is located in Muğla, the ability to provide the necessary conditions for kitesurfing, paragliding, scuba diving, and having hundreds of beaches suitable for sea-sand-sun tourism cause the tourism economy to have a key role in Muğla. Although changes occur in agricultural production over the years; frankincense, olives, greenhouse tomatoes, citrus fruits, pine honey, almond, pomegranate and seafood are the most important agricultural and animal products of the province. Considering that it has an agricultural area of approximately 2.325.000 hectares and its ecological wealth; agriculture is also one of the main sectors for the region. Fruit trees and vineyards prevail in most of the cultivated areas. Followed by vegetables, greenhouse agriculture,

cereals and ornamental plants. Muğla, located in the south-east of the Aegean Sea, has a rich and ecologically important ecosystem in terms of marine and terrestrial biodiversity. In fact, its sea meadows, coral communities, endemic marine organisms (e.g. *caretta caretta*, Mediterranean seal) are the basic elements of this biodiversity. It would be right to mention the superiority of Muğla in the terrestrial ecosystem. The endemic species, the sweet gum tree, is an endemic species of Muğla. Muğla is also one of the main distribution areas of many plants such as olive, laurel, carob and pine.

It is not surprising that industry, which includes mining and quarrying, is following the increase in the share of the construction industry in GDP. However, the negative divergence of the share of real estate activities in GDP from the construction trend can be considered interesting. This situation may mean that real estate owners in Muğla have high speculative earnings expectation and interest sensitivity in housing demand is high.

Although the share of the manufacturing industry in GDP is low, it follows an upward trend. The relative size of the trade and service sector in Muğla's economy is clear. The agriculture industry follows the service sector as a share. However, the decreasing trend of its share in GDP continues. It is seen that the share of income generated by agriculture, forestry and fishing activities in Muğla GDP decreased from 18% to 14%. In the years when the sharp declines in the agricultural industry occurred, an increase was observed in the service sector and the construction sector. It would not be wrong to say that the workforce engaged in agricultural activities is channeled to the service and construction sectors.

Muğla's export performance is discussed on a product scale in order to deepen the analysis of Muğla's sectoral specialization. Tourism continued to be an important element of Muğla's economic structure with a revenue of \$2.5 billion in 2022. However, tourism revenues are not included in the export tables.

The table below shows Muğla's export, import and coverage rates on the ISIC Rev.3 Lev.1 scale. It is a general table and does not include product details.

Table 1.3: Foreign Trade Data of Muğla, 2023, According to ISIC Rev.3 Level 1⁵ (General Trade System⁶) (\$)

ISIC				
Code	ISIC Name	Export	Import	Exp./Imp.
A	Agriculture and forestry	49.038.897	6.725.383	7,29161402
B	Fishery	357.519.618	424.437	842,338481
C	Mining and quarrying	50.071.147	778.098	64,3506949
D	Manufacturing industry	610.276.075	458.447.721	1,33117921
G	Wholesale and retail trade	433.732	9.121.752	0,0475492
	Real estate, rental and business			
K	activities	0	97	0
	Other social, community and			
O	personal services	3.387	6.955	0,48698778
Total		1.067.342.856	475.504.443	2,2446538

Source: (TURKSTAT, 2024).

Muğla's exports in 2023 are \$ 1.067.342.856 and imports are \$ 475.504.443 (Turkish Statistical Institute, 2024). Naturally, the export-import coverage ratio is 2,244. One of Türkiye's biggest problems, which has been ongoing since the 1980s when it was integrated into the liberal economy, is its current account deficit. Except for the real estate (K), wholesale-retail trade sectors (G) and other social sectors (O), it exhibits a performance beyond self-sufficiency. Muğla shows an exceptional performance in this regard. In addition, the production of seafood-based products is included in Category D. Frozen, filleted, packaged seafood, and boat manufacturing are among the subheadings of this category.

The table below shows Muğla's detailed exports based on products. The table covers the years 2014-2023:

⁵ The International Standard Industrial Classification, Revision 3, Level 1 is the highest level category of the third revision of the International Standard Industrial Classification developed by the United Nations and used to classify economic activities.

⁶ Since all economic activities carried out within the borders of the country are included in the general trade system, products in free zones, warehouses and temporary storage areas within the customs borders are also included in the export data.

Table 1.4: Detailed Export Performance of Muğla, 2014-2023, (1.000 \$)

Product	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Steel	3.924	5.163	835	663	1.438	1.208	1.084	1.592	5.023	6.181
Cement Glass Ceramics and Soil Products	337	203	382	396	1.950	26.868	20.303	35.124	36.657	25.134
Ferrous and Non-Ferrous Metals	1.335	622	297	523	358	792	1.071	2.426	5.360	4.595
Leather and Leather Products	272	118	148	212	129	215	436	804	1.868	900
Other Industrial Products	628	310	367	743	1.061	1.064	865	1.408	1.261	0
Electrical and Electronics	412	411	700	590	360	492	290	1.953	1.059	1.869
Ships, Yachts and Services	22.890	18.594	4.770	26.160	37.871	20.603	2.785	10.719	14.430	24.987
Carpet	68	6	3	23	49	88	30	11	7	6
Ready-made Clothing and Apparel	2.201	2.449	2.633	2.854	3.951	3.334	11.740	4.185	4.926	5.030
Cereals, Pulses, Oilseeds and Products	3.037	7.464	9.022	5.249	7.280	7.313	9.454	11.154	26.148	54.811
Air Conditioning Industry	1.177	1.148	890	1.113	1.000	828	350	774	2.554	2.387
Chemical Substances and Products	1.634	1.134	425	928	822	801	1.268	3.295	8.262	5.339
Dried Fruit and Products	91	70	32	19	118	60	199	88	114	128
Mining Products	33.324	38.271	37.003	45.905	59.339	66.311	76.238	105.700	130.890	122.180
Machinery and Parts	3.879	9.992	4.030	4.235	5.987	6.495	4.395	4.724	11.935	13.132
Fruit and Vegetable Products	1.492	1.753	2.614	2.551	3.305	4.139	4.544	4.468	5.265	4.832

Furniture, Paper and Forest Products	5.728	4.803	4.042	4.439	4.429	4.720	4.718	6.970	5.688	5.103
Gem	2.470	4.155	3.642	3.382	3.144	5.433	2.713	1.750	2.505	3.244
Automotive Industry	1.903	946	1.559	2.004	931	3.204	332	387	3.245	3.924
Aquaculture and Animal Products	198.400	221.250	259.410	272.100	330.200	368.310	404.340	528.430	672.750	687.640
Ornamental Plants and Products	30	53	35	12	126	130	73	103	61	20
Textile and Raw Materials	494	891	565	978	840	517	685	1.003	945	1.687
Fresh Fruits and Vegetables	18.871	21.322	22.115	18.948	25.925	30.615	37.310	44.897	35.434	44.738
Olives and Olive Oil	531	346	177	39	238	508	192	1.433	1.336	408
TOTAL	305.150	341.500	355.710	394.140	490.870	554.100	585.720	774.040	978.160	1.018.570

Source: Author's own illustration (based on Türkiye Exporters Assembly, 2024).

The export volume of Muğla has had a 2.5-fold rise between the years 2014 and 2023. Muğla holds the top position in Türkiye with its extensive coastline measuring 1,488 km. Aquatic items account for 60% of the total value and are considered one of the leading sectors in Muğla. It encompasses the pursuit of both marine and freshwater fish through hunting and the practice of aquaculture.

Twenty different species are grown in aquaculture, mostly sea bream (sea), sea bass (sea), minekop (sea), yellowmouth (sea) and trout (inland water). At the same time, Muğla stands out in the 'processing and storage of fish product' sub-sector. Seafood is also exported as fresh, chilled, frozen, whole or fillet. Muğla province is an important agricultural city due to its climate, geographical features, rural population and ecological advantages. The agriculture and livestock sector is among the top five sectors of Muğla with its export values in the province, where many products produced in Türkiye can be grown, the main ones being olives, honey, almonds, pomegranates, tomatoes and citrus fruits.

Products such as Bodrum tangerine, Muğla pine honey, Milas olive oil and Milas oil olives, which stand out in terms of export, are among the geographically indicated products. Muğla province has significant underground resources and richness. In this context, 'quarrying-mining' and 'production of other mineral products' sectors in the province are important economic activity areas in terms of both manufacturing and export. When sorted by density; Coal, feldspar, chrome, graphite, calcite, quartz, emery, aluminum, dolomite and mica are produced. In addition, production areas such as precious stone processing are also gaining importance in Muğla province. Lignite coal is widely available in Yatağan district and chrome deposits are widely available in Fethiye district. In addition to the presence of important marble deposits in the province, marble processing is also one of the important economic activities of the province. 24.71% of the manufacturing industry companies in Muğla province produce marble and 2.29% produce mineral products. The "marble" sector, which is prominent in Muğla's economy, is one of the most important manufacturing industry areas for the province in terms of employment and creates significant added value, although the number of companies is less than the food sector. However, it is considered that the actual export figure of the province may be slightly higher due to the fact that minerals and other non-metallic mineral products produced in Muğla province are exported through different customs gates by companies registered in different provinces (GEKA, 2023). In Milas, which is a leader in fish farms, there are approximately 70 floating sea and 150 land-based fish farms. There are around 30 farms in total in Bodrum and Marmaris. Another notable export

item is mining products. Mines constitute approximately 10% of the total exports of Muğla, which has 6% of the marble reserves in Türkiye. Other important export items are grains, pulses and oilseed products with a volume of 54 million dollars and fresh fruits and vegetables with a volume of 45 million dollars. With the ecological advantages of the "True Mediterranean Climate", the range of agricultural production in Muğla is quite wide.

1.6. Location Quotient Analysis of Muğla

In the previous section, the economic activities in which Muğla specializes were explained with GDP and export figures. Here, specialized domains are discussed by focusing on workforce concentrations segmented by sectors. However, before moving on to the interpretation of quantitative results, it is useful to remember the Location Quotient method. Isserman (1977) was the first researcher to introduce this approach as a method. Miller et al. (1991) emphasize that the location quotient is one of the simplest analytical tools for the economic development researcher, and that the purpose of the LQ technique is to show, in simple terms, how a particular industry is represented in a particular region by a coefficient.

The globalization process of the economy, the integration of national economies, the (to a large extent) realization of pricing in the international market, the heterogeneous characteristics of regions and countries greatly increase the interest in the phenomena of specialization and concentration. It makes it essential for countries or local governments to do some preliminary studies on industrial structure concentrations. Studies on international specialization patterns reveal a wide array of statistical methods. It is possible to talk about a wide array of tools ranging from simple statistical descriptive indicators to complex econometric techniques. It is not easy to say which index best reflects the phenomenon of specialization. Indices measuring specialization are basically divided into two groups: absolute specialization and relative specialization. The absolute specialization index can be used if the economic specialization in a country is concentrated on a few sectors and total employment is active in these sectors. Examples include the absolute specialization of Italy in textiles, the Scandinavian countries in pulp and paper, and Poland in agriculture and food. The

indices in the second group (heterogeneity indices) focus on determining how much the industry structure of a country deviates from the average industry structure of the reference country group. In other words, it provides a relative calculation of the country's specialization based on the reference countries. For example, Finland is more specialized in telecommunication technologies than Western European countries. However, when looking at the absolute share of the Finnish industry, the share of the telecommunications sector is low. While planning economic development, the trajectory of specialization in the region is also of great importance. Because, due to the heterogeneity of the space, economic agglomerations occur. The main reason for the accumulation of economic activity in any place is that one or more of the natural inputs in the region transform the production function into increasing returns to scale (Palan, 2010).

There are lots of indices to measure the specialization and concentration of a region, a country or a city. Each has strengths and weaknesses against each other. Location Quotient analysis method will be used in this study. Since only labor data is available from the inputs, employment LQ analysis will be performed. The strength of the model is its ability to compare the concentration of workers in a specific industry in a given region to a larger reference region. The formula is shown in equation (1):

$$LQ = \frac{\text{District Industry Employment} / \text{District Total Employment}}{\text{Province Industry Employment} / \text{Province Total Employment}} \quad (1)$$

The evaluation of the resulting value is shown in the table below:

Table 1.5: LQ Values and Implications

Value	Implication
LQ > 1	Area has proportionally more workers employed in a specific sector than the larger comparison area.
LQ = 1	Area is proportionally equal to the larger comparison area in a specific sector.
LQ ≥ 1,25	Within the specified sector, the area functions as a supplier of commodities or services to other regions or other countries.

LQ < 1	Area has proportionally less workers employed in a specific sector than the larger comparison area. May indicate opportunity to develop businesses in the local area or less demand for products of the specific sector.
--------	--

Source: (Indiana Department of Workforce Development & Indiana Business Research Center, 2006: 1)

Prior to examining sectoral specializations of Muğla, the data is shared by the social security institution. In other words, workforce data officially registered by the employer is used. Insured workers in Muğla districts and province NACE rev. are grouped according to 2 codes and LQ analysis is performed according to these categories. It is important to acknowledge that there is a substantial number of uninsured daily wage workers in the agriculture and construction sectors in Türkiye. In addition, there exist family farms that are not engaged in commercial activities. Their objective is to fulfill their personal need without anticipating any financial gain from the agricultural goods they generate. We compare the districts of Muğla with the province of Muğla:

Table 1.6: LQ Analysis of Districts Referenced Muğla Province, 2014

2014	A	B+D+E	C	F	G+H+I	L
Bodrum	0,302793	0,35349	0,77306	1,20612	1,14332	2,03219
Dalaman	0,32766	1,09017	1,06852	0,65269	0,94426	0,30341
Datça	0,177021	1,252568	0,731536	1,739899	0,964643	0,437424
Fethiye	1,165336	0,500889	0,891457	0,966893	1,098538	0,437424
Kavaklıdere	1,419498	4,100225	2,920969	0,659315	0,154002	0,035451
Köyceğiz	3,998375	1,823769	1,243255	0,809359	0,791177	0,046627
Marmaris	0,354938	0,220915	0,875657	0,495101	1,49821	0,456855
Milas	2,144384	2,13335	1,58452	1,186896	0,671528	1,179483
Menteşe	0,74398	0,898403	0,781932	0,893954	0,770544	0,870973
Ortaca	0,683239	0,197538	0,693986	0,970214	1,22857	0,271918
Seydikemer	5,195033	1,05229	1,367341	1,576407	0,527256	0
Ula	0,688541	0,631502	1,908944	1,012775	1,034149	0,26497

Yatağan	0,702547	4,67453	1,154924	1,035144	0,562739	0,034988
Note: The next table displays NACE Rev.2 codes.						

Source: Author's own calculations (based on Muğla Social Security Institution, 2022)

Table 1.7 lists the letter taxa corresponding to the sectors:

Table 1.7: Broad Structure of NACE Rev. 2

A-Agriculture, Forestry and Fishing	L-Real estate activities
B-Mining and quarrying	M-Professional, scientific and technical activities
C-Manufacturing	N-Administrative and support service activities
D-Electricity, gas, steam and air conditioning supply	O-Public administration and defence; compulsory social security
E-Water supply; sewerage, waste management and remediation activities	P-Education
F-Construction,	Q-Human health and social work activities
G-Wholesale and retail trade; repair of motor vehicles and motorcycles	R-Arts, entertainment and recreation
H-Transportation and storage	S-Other service activities
I-Accommodation and food service activities	T-Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
J-Information and communication	U-Activities of extraterritorial organizations and bodies
K-Financial and insurance activities	

Source: (Eurostat, 2008:57)

When looking at sectoral concentrations, it is seen that the labor force concentration in the agriculture, forestry and fisheries (A) sector of Seydikemer, Köyceğiz, Milas, Fethiye and Kavaklıdere is above the average of Muğla. In the mentioned sector, labor force inflows to these districts from other districts of Muğla. Köyceğiz is home to large frankincense forests where frankincense oil used for medicinal and cosmetic purposes is obtained. Citrus, watermelon, tomato and pomegranate are frequently grown in Seydikemer and Köyceğiz. Seydikemer is the district where Muğla's largest pastures (1000 decares) are located. Therefore, there is a high concentration of employees working in cattle and sheep farming. Although agricultural concentration seems to be high in Seydikemer's neighboring district,

Fethiye, the trend of transforming agricultural areas into zoned areas continues, as the district is the apple of the eye of local and foreign tourists and investors. Kavaklıdere is a district where 70% of its surface area consists of forests. It is not surprising that forestry activities are above the Muğla average. In addition to being not touristic or landlocked, copper smithing is a professional group identified with the region.

The concentration in the mining, quarrying (B), electricity, gas (D) and water supply/management (E) sectors is well above the provincial average in Kavaklıdere, Yatağan and Milas districts. Although the marble reserves of Kavaklıdere are not fully known, it is one of the exporting districts of Türkiye. Yatağan is also adjacent to Kavaklıdere and is a shareholder of the same marble reserves. There are also lignite deposits. The presence of Muğla's largest thermal power plant in Yatağan also causes the concentration in these sectors to be high. There are two thermal power plants in Milas. Since the density of personnel working in the plants is quite high, the density of employees in the mentioned sectors is higher than Muğla overall. Milas' density in all mentioned sectors is above average. In this case, theoretically, Milas's labor needs are met by other districts, *ceteris paribus*.

Kavaklıdere again stands out in the Manufacturing (C) sector. Marble companies located in Kavaklıdere also have the necessary machinery and equipment to process marble. Mines from marble and quarries become an activity of the manufacturing sector from the moment they are processed. Ula also seems to specialize in the C sector. When we look at the employees, the majority of employees are engaged in the production of joinery and carpentry products and the cutting of stone and marble.

The concentration rates in the construction sector (F) of the districts' exhibit a high degree of similarity. The concentration in the production industries and construction sector in Datça is higher than in Muğla province. Datça is more disadvantaged than other districts in terms of location. The distance to the airports is long and the road is quite winding. However, the recent tendency of people to prefer more isolated places for recreation or living may have caused an increase in the

demand for housing and workplaces in Datça. Therefore, concentration in the construction industry is quite normal.

It is seen that the density of employees in Bodrum's construction (F), service (G+H+I) and real estate (L) sectors is higher than the remaining of the province on the stated sectors. The working population concentrated in the real estate sector may also mean that the demand for real estate in Bodrum is much higher than in Muğla overall.

In the real estate (L) sector, Bodrum and Milas are exporter of workers; the fact that the same sector has a concentration close to 0 in Köyceğiz, Kavaklıdere, Yatağan and Seydikemer indicates that the demand for real estate in those regions is low and therefore the demand for labor to work in the sector is also low.

In Köyceğiz, there is an agricultural and forestry production based on citrus, watermelon, melon, tomato, pomegranate and most importantly frankincense oil. It can be estimated that Köyceğiz is an exporter in agriculture. In addition, the density of manufacturing and other industries is higher than Muğla province. However, the density of employees in the construction, trade and service, and real estate sectors is lower than in Muğla province.

LQ indicates a high concentration of service, retail and wholesale sales (G, H and I) in Marmaris that is well above the other regions. In line with the suitability of its environmental characteristics for sun-sea-sand tourism, in Marmaris the majority of employees work in the accommodation, food and beverage, entertainment, transportation and travel agency sectors, that is, the service industry. The mentioned situation is an example of the Rybczynski Effect (see Rybczynski, 1955) which is one of the consequences of the Heckscher-Ohlin theory (see Heckscher & Ohlin, 1933). However, all other sectoral concentrations in Marmaris are behind Muğla.

The concentration in all sectors except service and trade sectors is higher in Milas than in Muğla. Milas is one of the districts with the highest manufacturing concentration among the districts. It also contributes significantly to the economy of Muğla and the country with its olive oil and fish exports.

The sectoral concentration in Menteşe is quite balanced. It is behind the province of Muğla in all sectors, but it is quite close. The district meets its workforce needs on its own. If the LQ value is above 1, that reference region is a supplier or exporter of goods or labor in the mentioned sector (see Table 1.5).

The concentration in Ortaca is distributed quite evenly. Hypothetical, labor force inflows from other districts in most sectors.

Seydikemer is the district with the largest pasture areas in Muğla. It is also the district where cattle and sheep farming activities are most intense. At the same time, agricultural production is also quite high. Concentration is high in the manufacturing and construction sectors.

The 2021 LQ data is shared in the following graph to add a dynamic dimension to the study:

Table 1.8: LQ Analysis of Districts Referenced Muğla Province, 2021

2021	A	B	C	D	E	F	G	H	I	L
Bodrum	0,379	0,256	0,737	0,0906	0,1872	1,4966	0,9670	0,7979	1,3570	2,0728
Dalaman	0,5583	1,2238	0,9949	0,9497	0	1,3449	0,7836	2,0661	0,3665	0,4442
Dağça	0,4084	0,5240	0,6342	0,3964	1,0881	1,4917	1,2047	0,5146	1,2010	1,7006
Fethiye	1,4424	0,8631	0,7985	0,3120	0,0978	0,8134	1,2580	1,1258	1,2611	0,6931
Kavaklıdere	1,4141	9,0938	2,8484	0,1974	0	0,4079	0,2246	0,2382	0,0543	0,1847
Köyceğiz	4,0450	0,7876	0,9868	0,6771	2,6173	1,2944	1,0123	0,9719	0,4320	0,0776
Marmaris	0,3259	0,0845	0,8076	0,1236	0,3226	0,4601	1,3314	1,1211	1,9433	0,5594
Menteşe	0,6606	0,5187	1,0312	0,8461	5,0484	0,6170	0,8723	0,9571	0,5084	0,4742
Milas	2,1933	4,0283	1,6874	3,2198	0,6660	1,0804	0,7637	1,2313	0,4803	0,9706
Ortaca	0,7391	0,5288	0,6073	0,1250	0,8447	1,1956	1,3085	0,9216	1,0021	0,2582
Seydikemer	6,6963	2,7465	1,4714	1,1235	0,5206	0,8230	1,1398	0,7269	0,3268	0,0477
Ula	0,6134	0,9463	1,2487	0	2,3302	1,1083	1,0616	0,7023	1,4450	0,2855
Yatağan	0,7267	18,419	1,0861	6,0055	0,3955	0,9361	0,6863	0,8146	0,0988	0,0566

Source: Author's own calculations (based on Muğla Social Security Institution, 2022)

The sectors with the lowest level of intensity in Bodrum are D and E. The concentrations are lower than 0,20. There is no facility in Bodrum that generates electricity using fossil fuels. There is no natural gas provider company. Only employees of ADM Elektrik, the electricity distributor company of Muğla, are present. The municipality is responsible for tasks such as wastewater and waste management in accordance with regulations. Therefore, professionals working in fields such as wastewater and waste management are categorized under the public sector. The concentration in categories A and B is less than 0,5. Bodrum is also a buyer in these sectors. While the subcategories of the sector, such as agriculture and forestry, are low, fishing activities (especially fish farming) are quite abundant. The commercial activities of one of Türkiye's largest volume seafood exporting companies are based in Bodrum. The B sector is also quite low. Underground resources are needed to carry out mining and quarrying activities. Bodrum has a low natural stone reserve and a scarcity of fossil fuels and metals, to the point of being almost nonexistent (T.C. General Directorate of Mineral Research and Exploration, 2010). When looking at the C sector, it can be observed that there is a significant concentration of employment in sectors such as fresh bakery products, building carpentry, woodworking products, products made of concrete and stone, processing of marble and stone, manufacturing of metal doors and windows, jewelry and costume jewelry manufacturing, and maintenance of ships and boats. However, it can be observed that the concentration of the manufacturing sector is below average in the province of Muğla. It can be observed that the concentration of luxury industries in Bodrum is significantly higher than in the overall Muğla province. The population density is approximately 1,5 times higher than the average in the province of Muğla. Considering the significant increase in real estate prices, it is not surprising that the construction sector in Bodrum is experiencing this situation. Sector I represents accommodation. The level of concentration is 1,35. Surprisingly, although Bodrum is the most crowded region in terms of tourist numbers, this level of concentration is an unexpected result. likely to be high. The L sector is the sector with the highest concentration at 2,07. This also implies that there is a significant population engaged in real estate brokerage in Bodrum.

In Dalaman, the highest concentration is in sectors A and B, unlike Bodrum. The sector has a rate of 2,55 percent. Agricultural activities are relatively intensive. The district has 162.348 decares of agricultural land. A significant portion of citrus fruits, olives, sunflowers, wheat, and greenhouse vegetables and fruits are cultivated in Dalaman. However, it should be noted that the total population employed in Dalaman is around 1/9 of Bodrum's population. The ratio of sector B is 2,22. Magnesite, chrome and stone are mined. Employees determine the density here. The concentration in categories C and D is around 1. It is at the same level as the entire province. There is no employment available. Undoubtedly, the labor demand is met from neighboring districts. The concentration in the H sector is above 2. The presence of one of Muğla's two airports in Dalaman leads to a high number of transfer agencies and a significant concentration in the transportation sector. As the demand for Muğla increases among tourists or residents, it is certain that employment would intensify.

It can be observed that in Datça, there is a high concentration of activity in sectors such as agriculture, mining, manufacturing, energy production, and supply, which accounts for about half of the overall level of the province. Datça relies solely on underground water sources as its only drinking water supply due to the absence of reservoirs. However, the high salinity of groundwater and the geological structure provide significant obstacles to the agricultural sector in most regions. There is no natural stone and mineral reserve (MTA, 2010). Concentration is sparse in the manufacturing and energy sectors. Category E is located approximately at the provincial level. Concentration is 1,5 times the general concentration in category F. In regions with high tourist demand, there is a noticeable excess of concentration in the construction sector. Category G is at level 1,2. The H category is equal to half of the general population. This also indicates that visitors and residents in Datça rely on their private vehicles for transportation. Visitors who wish to avoid the crowds of the most popular places in Muğla prefer the region that is geographically the most isolated in Muğla. The concentration in the sector is over 1, indicating a low concentration in the transportation sector. This also demonstrates the existence of tourist potential in Datça, yet alternative tourism is preferred over mass tourism. The density in L is at a level of

1.7. This also indicates that the demand in the real estate sector is significantly higher in Datça compared to the overall Muğla province.

It is seen that agricultural concentration in Fethiye is less than 0,50. There are mining activities. It is slightly below the provincial average in the mining and quarrying sector. However, underground reserves are rich in dolomite, chrome and manganese mines (MTA, 2010). Concentrations in sectors D and E are below 0,3. The absence of any thermal power plant, the absence of natural gas, and the fact that most of the work related to waste and drinking water is carried out by the General Directorate of Muğla Water and Sewerage Administration (MUSKİ), which is a public unit, reveals the reason for the rarity in the D and E sectors.

When looking at Kavaklıdere, it is evident that there is a high concentration in the sectors of forestry (A), mining (B), and mineral processing-manufacturing (C). The concentration in the mine has doubled compared to 2014. The attractiveness of profitability in the sector and the significant impact of the government's transparency in leasing mining areas are important factors. In this case, the sector is in a position of being an importer of labor force. The lack of concentration in the E industry is striking. By the time 2021 arrives, the importance of forestry (A) companies manufacturing liquidambar oil in the economy of Köyceğiz remains significant. Furthermore, there is a high level of concentration in the waste management (E) sector.

It is seen that the concentration in the accommodation, food and beverage services (I) sector in Marmaris has increased significantly. Marmaris is one of the popular destinations for marina tourism in the Aegean-Mediterranean basin. Since it hosts many marinas and boats, its concentration in the field of passenger transportation (H) in sea and coastal waters is also quite high.

The concentration in the field of improvement and waste management (E) in Menteşe is approximately 5 times the Muğla provincial average. Approximately 180 tons of domestic waste are separated daily in the solid waste regular storage and separation facility located here. Naturally, its working capacity is high.

By 2021, Milas maintains its position as the district that specializes in the most sectors in Muğla. Its specialization in the fields of olive oil (A), mining (B), mineral processing (C), and fossil fuel electricity generation (D) is well above Muğla.

In 2021, Ortaca is among the districts that transfer the most workforce to other districts. Except for retailing (G), there is no sector in which it specializes above average.

Seydikemer is one of the three most rural districts of Muğla. The concentration in the field of agriculture and animal husbandry (A) in Seydikemer is increasing compared to the previous period. Additionally, concentration is high in building stone quarrying (B). It is one of the least frequent districts of Muğla in the accommodation, food and beverage (I) sector.

Since it is a neighborhood of Akyaka Ula, one of the most famous windsurfing destinations in the Mediterranean geography, Ula is exposed to intense interest from tourists. Therefore, sectoral concentration in accommodation (I) is high. Energy-related (D) personnel are not visible.

By 2021, there has been no change in the sectoral distribution of Yatağan. Its economy is based on marble and electricity production. It cannot be overlooked that agricultural production has decreased compared to 7 years ago. Although it is a feasible region for olive production, the existence of thermal power plants and carbon emissions have a negative impact on the quality of agricultural production and its demand.

We discussed the sectoral concentrations of Muğla's districts above. It is seen that underground resources, touristic demand and agricultural needs are the determining factors in sectoral concentrations.

1.7. Tourism Sector in Muğla

Muğla has 238.773 bed capacity, hosts 3.000.000 tourists a year and generates an annual tourism income of approximately \$ 2.000.000.000 from inbound tourists. Moreover, the share of Muğla's direct foreign tourism expenditures in Türkiye's total

is approximately 7% and the tourism GDP of Muğla constitutes approximately 30% of Muğla total (Muğla Culture and Tourism Provincial Directorate dataset, 2023; TURKSTAT; 2023). When the graph below is examined, the increase trend in foreign tourists visiting Muğla can be seen. However, there were sharp increases until 2005, after which the rate of increase decreases. The reasons for the sharp declines in 2015, 2016 and 2020 are political shocks and COVID-19 restrictions.

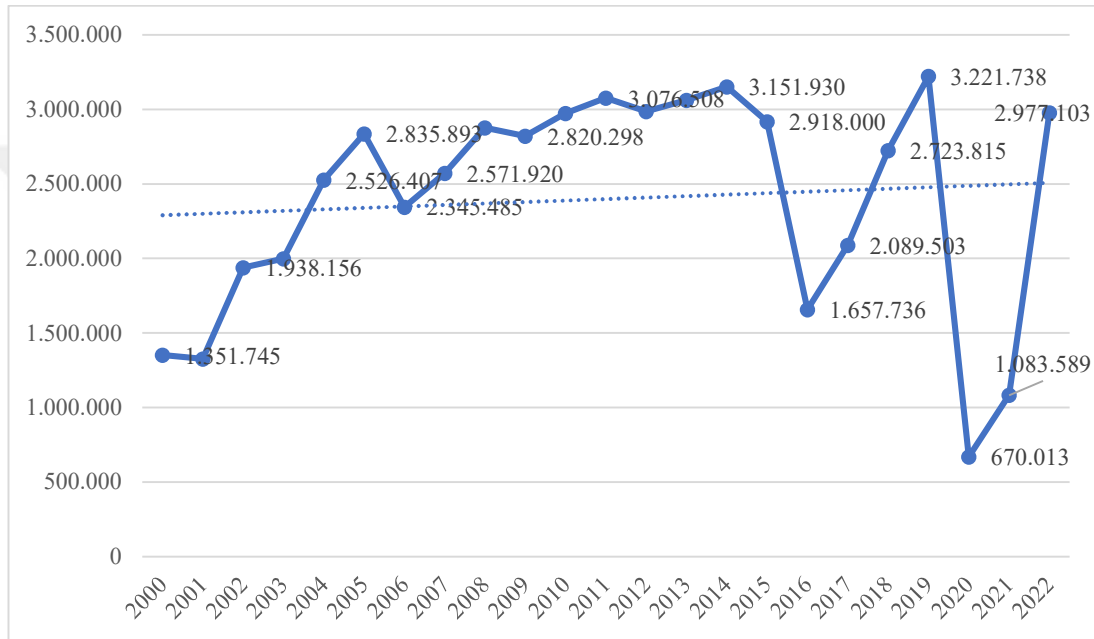


Figure 1.11: Number of Foreign Tourists Entering through Muğla's Border Gates

Source: Author's own illustration (based on Republic of Türkiye Ministry of Culture and Tourism, 2023)

When we look at the number of foreign visitors to Türkiye, the increase seems to be stagnant. There are significant decreases in the number of tourists during periods of political crisis and pandemic restrictions.

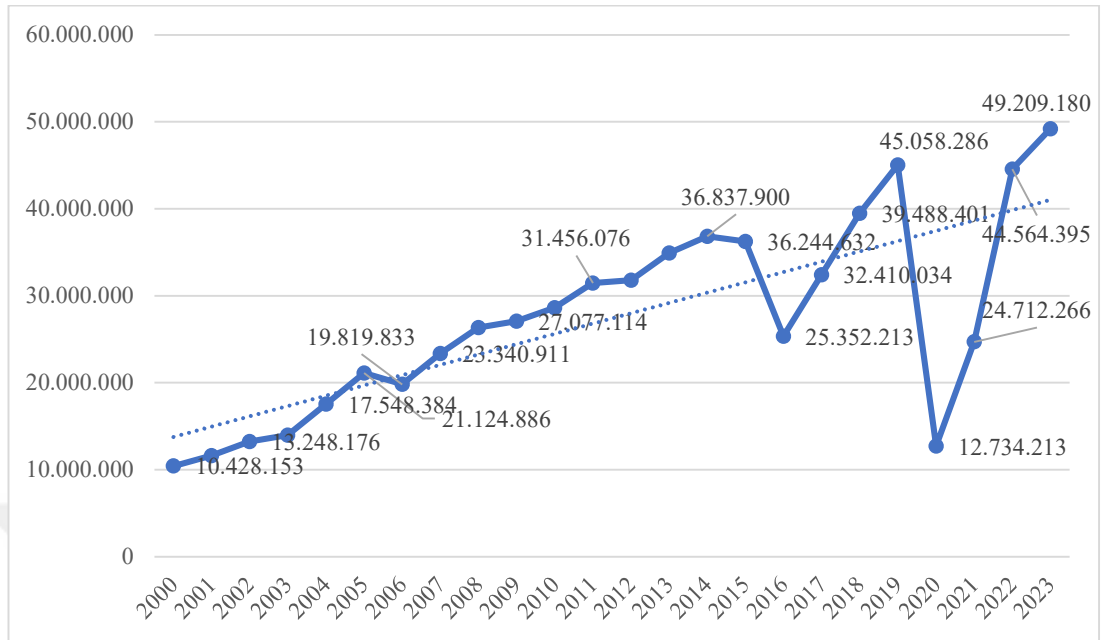


Figure 1.12: Number of Foreign Tourists Arriving Türkiye

Source: Author's own illustration (based on Republic of Türkiye Ministry of Culture and Tourism, 2023)

Looking at the following graph, it can be seen that the average expenditure in dollar terms shows a downward trend. Low and middle-low income tourists are more likely to prefer to visit Türkiye, although, many other factors make this. The main dynamics affecting tourism demand with theoretical foresight are prices, exchange rates, income of foreign tourists, the attractiveness of the country and trade openness. In fact, we can expect that the average expenditure of foreign visitors will tend to increase as a result of the depreciation of the TL and the increase in GDP per capita in most of the countries visiting Türkiye. However, looking at the graph, it is seen that the increase in the purchasing power of foreign tourists does not have a positive effect on average spending. It is considered the quality of goods and services in the tourism sector is decreasing, and therefore the price of goods and services is decreasing. Therefore, low-income tourists prefer Türkiye. Low-income tourists choosing Türkiye also causes a negative exclusion effect on high-income tourists. Lozano et al. (2005) and Cerina (2007) emphasizes that the number and quality of other tourists visiting the destination is a solid factor affecting tourism demand. Türkiye's score in the competitiveness index is 4,39 out of 7. Its rank among world countries is 29.

Table 1.9: Türkiye Travel & Tourism Competitiveness Index, 2023

Enabling Environment	Travel & Tourism Policy and Enabling Conditions	Infrastructure	Travel & Tourism Demand Drivers	Travel & Tourism Sustainability
Business Environment (3,55)	Prioritization of Travel and Tourism (6,12)	Ground and Port Infrastructure (3,72)	Natural Resources (3,50)	Environmental Sustainability (4,18)
Safety and Security (4,96)	International Openness (4,16)	Air Transport Infrastructure (5,5)	Cultural Resources (4,96)	Socioeconomic Resilience and Conditions (4,32)
Health and Hygiene (4,85)	Price Competitiveness (5,19)	Tourist Service Infrastructure (3,40)	Non-Leisure Resources (4,23)	Travel and Tourism Demand Pressure and Impact (3,10)
Human Resources and Labor Market (3,52)				
ICT Readiness (5,29)				

Note: Values in parentheses indicate the score. Scores range from 1-7.

Source: (World Economic Forum, 2024:37)

When we look at the remarkable values in the table, Türkiye's score is quite high in terms of giving political leadership to the tourism sector. Policies such as the construction of large international airports and not blocking travel during the pandemic period cause this value to be high. Information and communication technologies (ICT) readiness is also high. Türkiye has taken important steps in digital transformation and developing its ICT infrastructure in recent years. Initiatives such as e-government applications, expansion of broadband internet infrastructure and digital literacy training aim to increase ICT readiness levels. However, infrastructure deficiencies and digital skill shortages in rural areas are among the factors limiting development. The lowest score is 'Travel and Tourism Demand Pressure and Impact'. Due to increased demand during the summer season, beaches, hotels and restaurants can become overcrowded. This can lead to inadequate local infrastructure and poor service quality. Heavy tourist traffic can put pressure on waste management and water resources. Furthermore, overuse of natural areas can lead to environmental destruction.

As it is known, one of the most visited countries in Europe for touristic purposes during the summer months is Greece. The geographical characteristics, cuisine and cultural heritage of the Greek islands in the Aegean Sea show serious similarities with Antalya and Muğla, the 2nd and 3rd most visited cities of Türkiye. The average expenditure per trip of tourists visiting Greece since 2003 differs positively from that of Türkiye. This is a sign that Türkiye is slightly behind its tourism potential. Although Türkiye is a more competitive country than Greece in terms of infrastructure, airports, marinas, and positive sociological features (such as hospitality), with which we share the market, is due to factors such as the inadequacy of human capital in the sector, digitalization in marketing, and regulations on nature protection. We see that average expenditure of an overnight tourist visiting Greece is higher than Türkiye's.

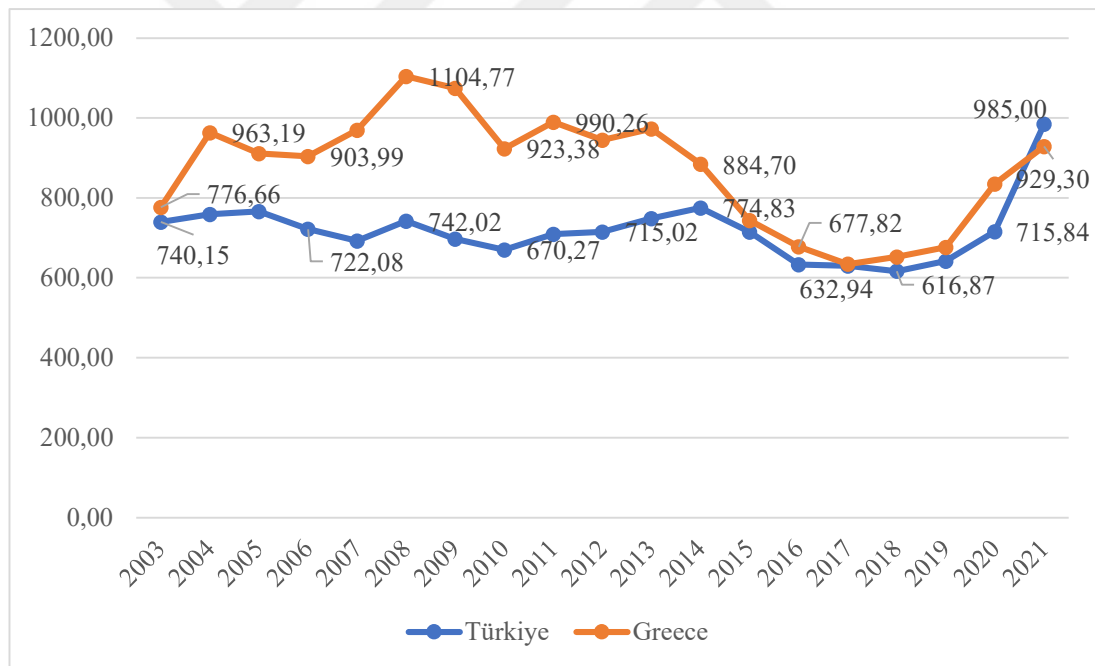


Figure 1.13: Overnight Foreign Tourist Spending Per Trip

Source: Author's own illustration (based on Republic of Türkiye Ministry of Culture and Tourism, 2023; <https://www.worlddata.info/europe/greece/tourism.php>)

Türkiye's tourism income is on an upward trend except for the years when the plane crisis with Russia in 2015, the coup attempt in 2016 and the COVID-19 travel restrictions in 2020 reached their maximum level. In Muğla, it is seen that the upward trend in tourism revenues of Türkiye, where tourism revenues remained stagnant

between 2004-2021, is not valid for Muğla. Discovering different destinations of Türkiye every year and placing different destinations at the center of attention of tourism visits have an important role in this. In this range, it is seen that more than 10% of Türkiye's total tourism income consists of touristic activities in Muğla. Despite the decrease in average tourist expenditure, the number of foreign tourists visiting Türkiye is increasing linearly every year (until 2014). It is observed that the country's tourism income has increased. However, the sharp declines due to the impact of political shocks and COVID-19 restrictions reveal the fragility of the industry.

Although Muğla's tourism income is not directly included in the database, the number of foreign tourists visiting Muğla and the average expenditure of a foreign tourist visiting Türkiye are included. It is assumed that the average expenditure of a tourist visiting Muğla is the same as in Türkiye. The data is calculated by multiplying the number of visitors by the average touristic expenditure per trip.

Table 1.10: Muğla & Türkiye Foreign Tourist Expenditure (\$)

	Muğla	Türkiye
2004	1.867.165.758,00	17.076.607,00
2005	3.202.964.632,00	20.322.111,00
2006	2.156.524.755,00	18.593.951,00
2007	2.352.025.060,00	20.942.500,00
2008	2.433.246.680,00	25.415.067,00
2009	2.264.716.314,00	25.064.482,00
2010	2.335.125.155,00	24.930.997,00
2011	2.476.703.872,00	28.115.692,00
2012	2.549.834.650,00	29.689.249,00
2013	2.716.411.545,00	33.073.502,00
2014	2.800.679.424,00	35.137.949,00
2015	2.406.625.727,00	32.492.212,00
2016	1.326.981.656,00	22.839.468,00
2017	1.462.652.100,00	27.044.542,00
2018	1.876.621.935,00	30.545.924,00

2019	2.453.254.150,00	38.930.474,00
2020	650.813.904,00	14.817.273,00
2021	1.113.929.492,00	30.173.587,00
2022	2.694.278.215,00	46.477.871,00

Source: Author's own illustration (based on Republic of Türkiye Ministry of Culture and Tourism, 2022; TURKSTAT, 2023).

The table above shows the tourism revenues of Muğla and Türkiye. Looking at the data, the standard deviation of Türkiye's tourism income is considerably lower than that of Muğla. This means that while there are no relatively significant changes in the number of tourists visiting Türkiye and their average spending, there are larger changes in the number of visitors to Muğla over the years. This is a result of tourists' desire to visit different destinations, which is one of the main features of the tourism industry. It may also mean that tourists include other attractive destinations in Türkiye within the scope of their touristic activities.

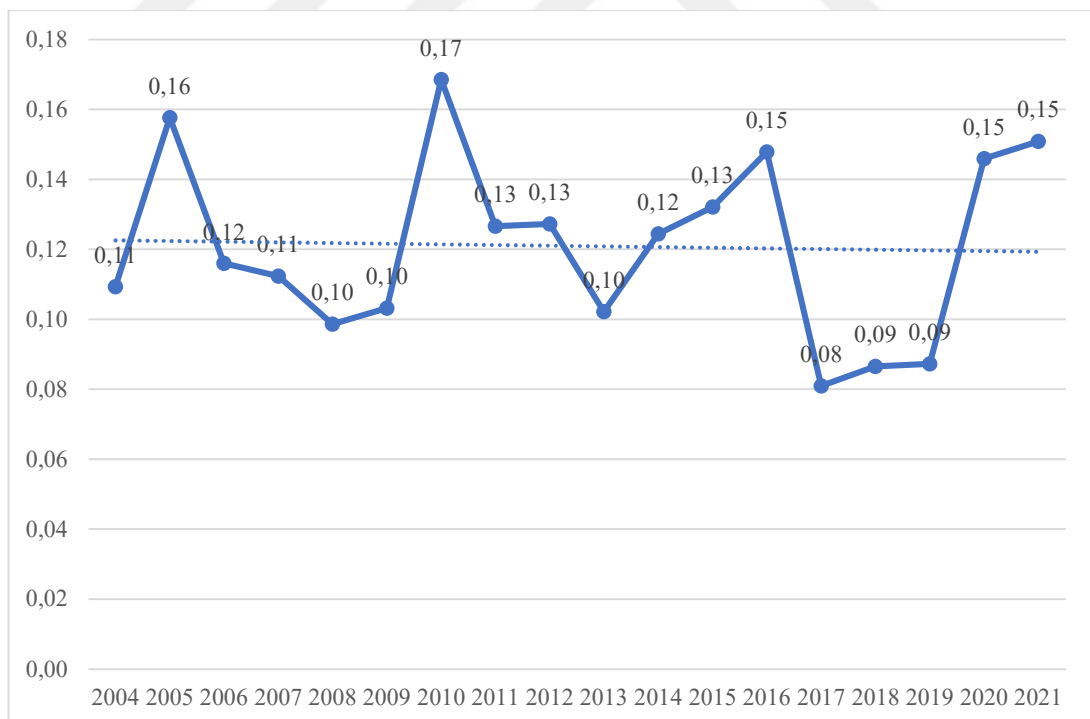


Figure 1.14: Muğla/Türkiye Tourism Income Ratio (%)

Source: Author's own illustration (based on Republic of Türkiye Ministry of Culture and Tourism; TURKSTAT, 2022)

The next chart shows the number of foreign tourists who visited Muğla over the years. It would be correct to say that the aircraft crisis in 2015, the coup attempt in 2016, and COVID-19 restrictions had a huge negative impact on the number of visitors. It is clear that the recovery took place within a few years. These political shocks change the natural trend in the data from positive to negative.

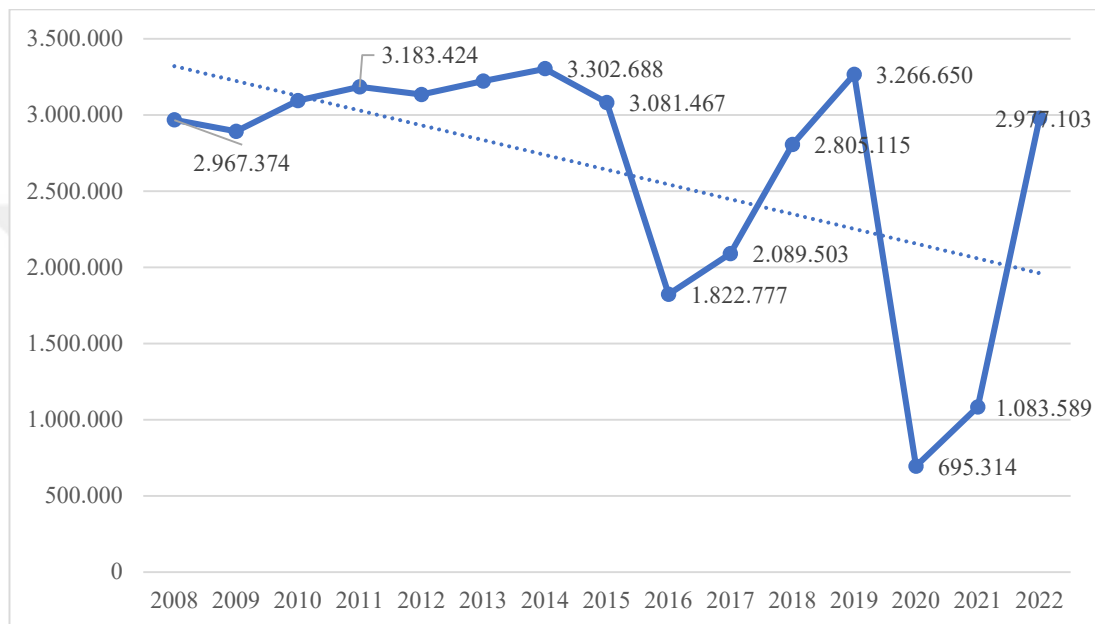


Figure 1.15: Total Foreigner Arrivals Visiting Muğla

Source: Author's own illustration (based on Provincial Directorate of Culture & Tourism of Muğla, 2023).

In transactions within the tourism sector, as well as in other industries, the factors in both the supplying and requesting segments play a crucial role. When developing a forecast for a destination, it is crucial to possess data regarding the price elasticity of demand, the characteristics of the destination such as its nature, sociocultural structure, historical legacy, security, infrastructure, and other relevant factors. Simultaneously, it is crucial to consider external factors that lead to fundamental shifts in demand when planning for a location. The tourism business is highly susceptible to political instability. Leisure and recreation activities are pursued with the intention of escaping from stress. Within this particular situation, the responsiveness of demand to changes in income and political shocks is significantly elevated.

Upon examining the nationalities of visitors entering Muğla's customs gates, it becomes evident that the proportion of individuals from the United Kingdom is significantly high. When examining the 20-year timeframe in the UK, the most significant economic and political events are the 2008 Great Recession, the BREXIT process from 2016 to 2020, and the COVID-19 pandemic from 2020 to 2021. Despite the contraction of the British economy in 2008 and 2009 as a result of the global crisis, there has been no decline in tourist activity in Muğla. From 2006 to 2015, there has been a noticeable rise in the number and proportion of British tourists visiting Muğla. The political upheavals in Türkiye throughout 2015 and 2016 had a discernible impact on the pattern of British tourists. Nevertheless, it is evident that the implementation of COVID-19 travel limitations in 2020 and 2021 has resulted in a decline in the volume of tourists visiting Muğla, similar to other global locations. However, this drop did not occur in proportionate terms. While there is a lack of scholarly research on the British preference for Muğla, it can be inferred from widespread rumors, personal observations, and conversations that the reasons for this decision can be outlined as follows:

- The environment and nature in this place are remarkably attractive.
- The purchasing power of visitors here is significantly greater compared to other places with similar natural features.
- They perceive Turks as exceedingly amiable and welcoming.
- There are regularly restaurants and bars in Muğla that blend British cuisine, music, and culture with Turkish traditional motifs.
- British individuals tend to enjoy revisiting the same place rather than vacationing in various locations each time.
- Nearly everyone in the destination is proficient in English.

Upon examining the tourist nationality pattern in Muğla, it becomes evident that Germans, Dutch, and Russians are the primary nationalities with the most desire for visiting Muğla. While the UK, the Netherlands, and Germany may appear to be similar in terms of population and prosperity, it is evident that the demand for Muğla from continental European countries is not as significant as it is from the UK. This can be viewed as an indicator of divergent customer preferences between them.

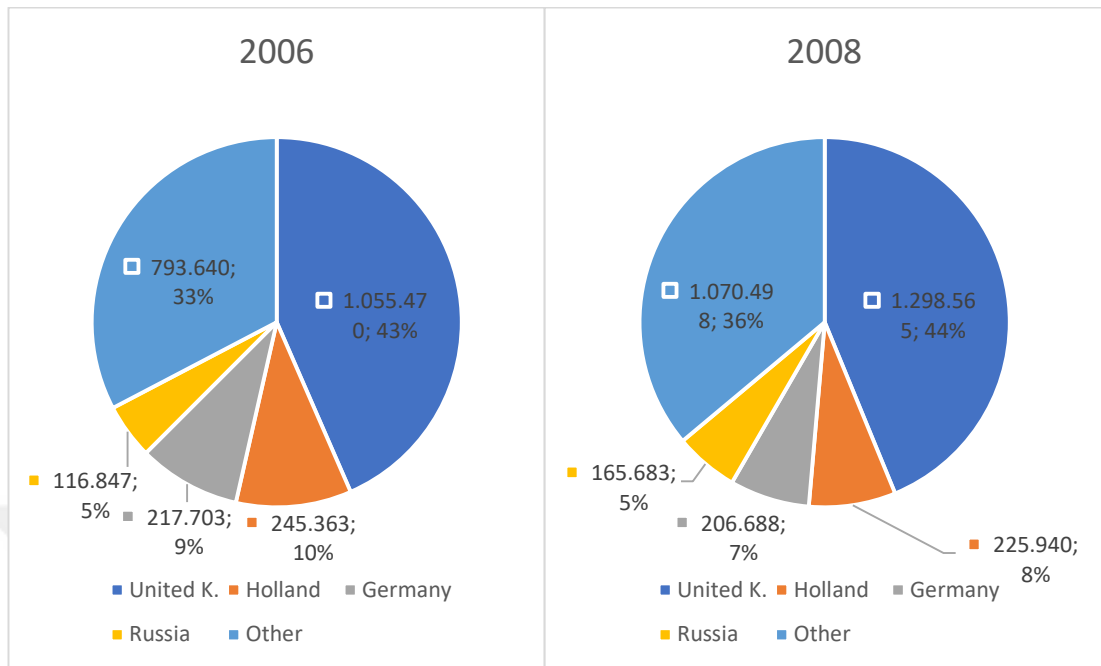


Figure 1.16: Foreign Arrivals of Muğla by Nationality 2006 and 2008

Source: Author's own illustration (based on Provincial Directorate of Culture & Tourism of Muğla, 2023)

The distribution of Muğla's visitors according to their nationalities in 2006 and 2008 is quite similar to each other. It would not be wrong to say that Muğla is an attractive place for UK, EU and Russia citizens. There is no significant alteration observed in 2009 and 2010. There is a minor increase in the inclination of British individuals to visit other places. The 2008 Global Crisis does not have a detrimental impact on the British people's inclination to visit Muğla. Nevertheless, the percentage of German and Dutch citizens in the overall population is declining. This phenomenon can be attributed to the repercussions of the 2008 financial crisis, as well as shifts in the consumer choices of tourists originating from these nations.

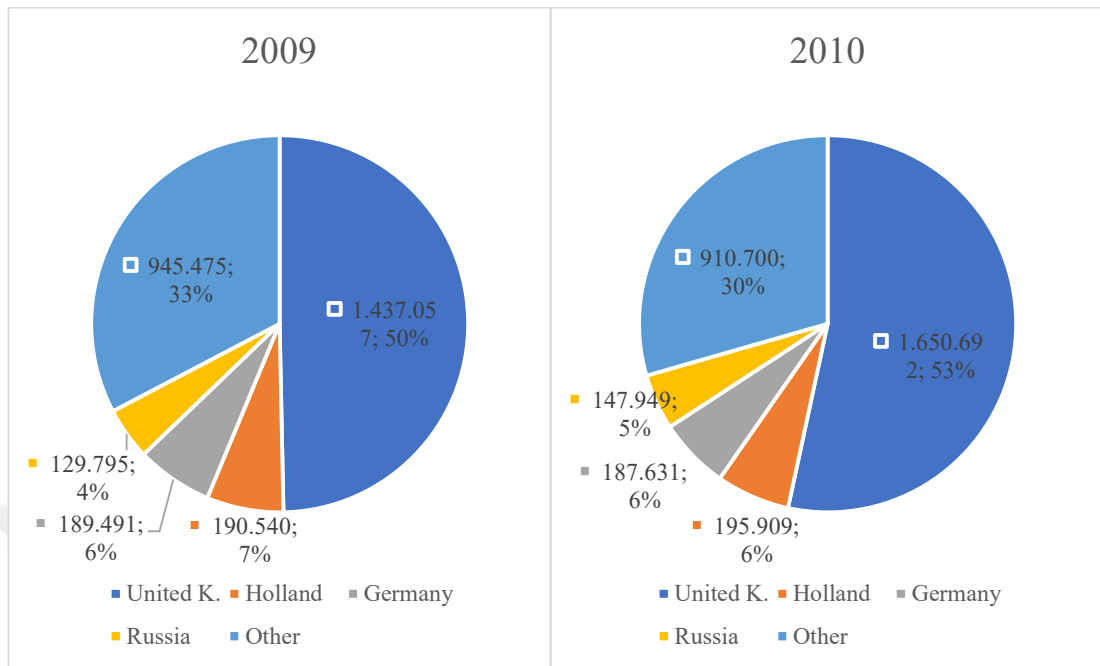


Figure 1.17: Foreign Arrivals of Muğla by Nationality 2009 and 2010

Source: Author's own illustration (based on Provincial Directorate of Culture & Tourism of Muğla, 2023)

By 2015 and 2016, we see the most obvious change in the 'others' group, the majority of which consists of visitors from middle-income countries. This group largely consists of Ukraine, Poland, Bulgaria and the countries in the Arabian Peninsula.

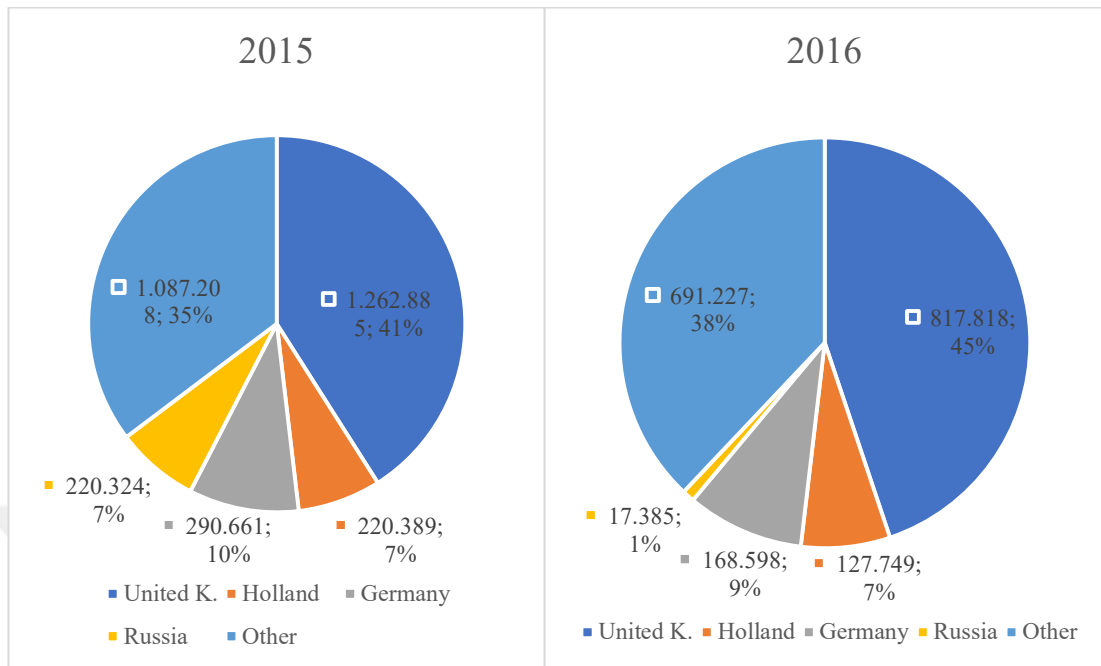


Figure 1.18: Foreign Arrivals of Muğla by Nationality 2015 and 2016

Source: Author's own illustration (based on Provincial Directorate of Culture & Tourism of Muğla, 2023)

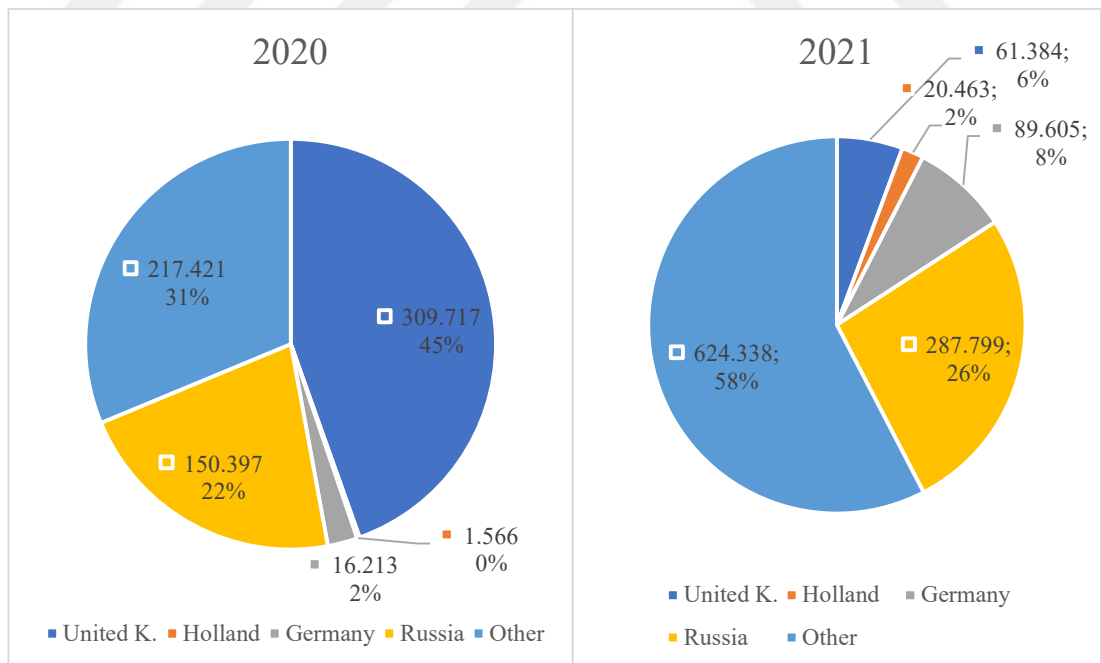


Figure 1.19: Foreign Arrivals of Muğla by Nationality 2015 and 2016

Source: Author's own illustration (based on Provincial Directorate of Culture & Tourism of Muğla, 2023)

During the pandemic years, the rate of German and Dutch nationals decreased significantly. There is a significant increase in Russian nationals.

Tourism income per capita in Muğla reached its highest (\$5,140) in 2010 in a 14-year period; We see that it dropped to the lowest level (\$1,758) in 2020. We can say that the biggest reason for the rise in 2010 and the decline in 2020 is undoubtedly the travel restrictions imposed due to COVID-19. The population increases more than tourism revenues, causing the trend to be negative.

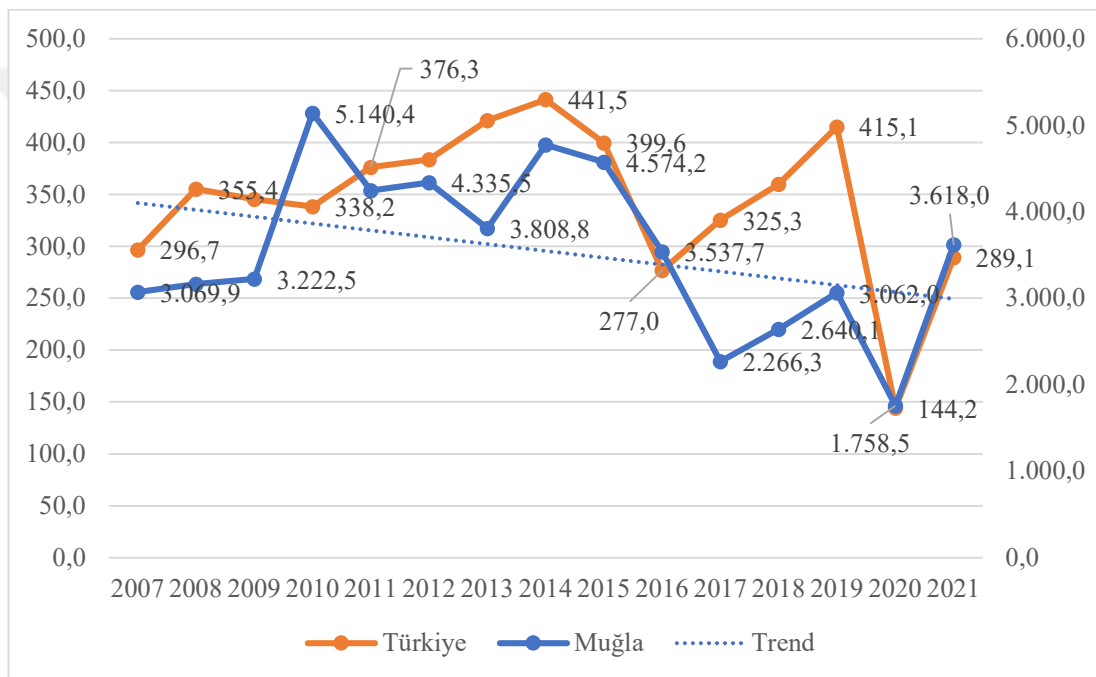


Figure 1.20: Muğla-Türkiye Tourism Income Per Capita (\$)

Source: Author's own illustration (based on Republic of Türkiye Ministry of Culture & Tourism, 2022; TURKSTAT, 2022)

Although, it may seem surprising and negative that the share of tourism revenues in GDP is decreasing in Muğla, which is very rich in terms of environmental and cultural assets and has more sunny days than competing destinations (especially Asia Pacific countries and the Aegean and Adriatic destinations in the northwest of Muğla), it is a rationale that has been proven plenty of times that overtourism creates negative environmental and public crowding out effects.

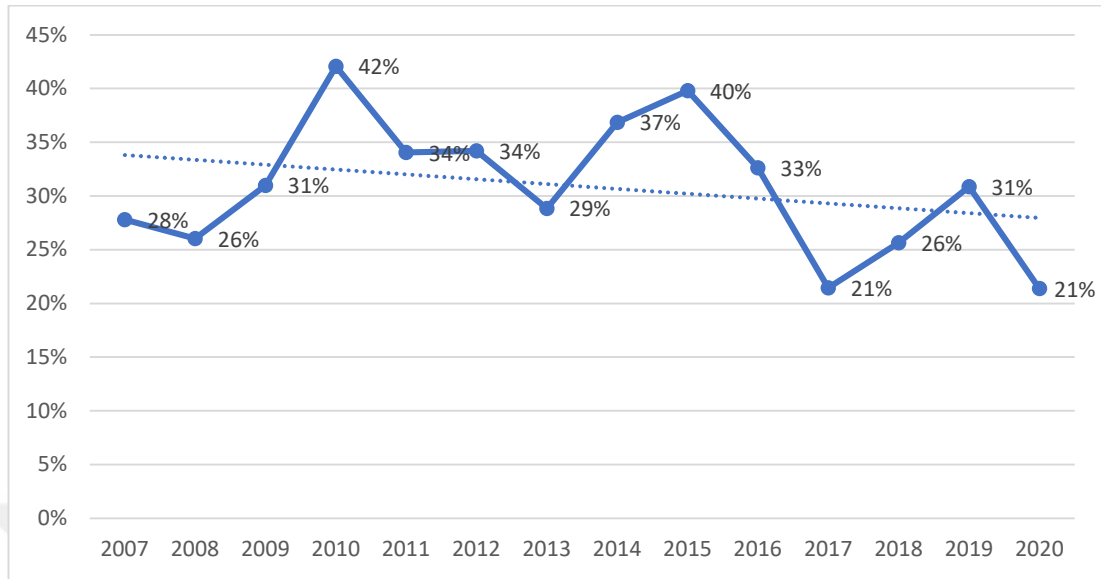


Figure 1.21: Share of Tourism Revenues in Muğla's GDP

Source: Author's own illustration (based on Republic of Türkiye Ministry of Culture & Tourism, 2022)

1.7.1. Competitiveness Analysis and Strategic Planning of Tourism Sector in Muğla

Before moving on to Muğla's competitiveness, the framework of another index that explains the hypothetical part in detail is as follows. Dupeyras, A. and N. MacCallum (2013) examines competition indicators and demand factors in tourism, the basic elements of competitiveness in the tourism industry are shown as follows:

Table 1.11: Key Elements Defining Competitiveness in Tourism

Key elements identified	Comments	Country responses
Governance of tourism	Government support and tourism as a priority, regulations, a whole of government approach, a tourism strategy, safety and security, public/private partnerships, vertical cooperation, statistics and data, multilateral cooperation, institutions (e.g. national tourism board), budget allocated to tourism support	Belgium, Canada, Chile, Egypt, Greece, Italy, Poland, Portugal, Spain, Türkiye, United Kingdom
Product development	Product differentiation, innovation, investments, market share, provide unique experiences, Increase the added value of tourism, develop high value segments, Marketplace perspective (including prospective travelers, tourism operators and small businesses)	Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Hungary, Israel, Mexico, New Zealand, Norway, Poland, Spain, Türkiye, United Kingdom
Quality of tourism services	Improve quality, welcome of visitors, quality of life, social equity and cohesion, services to consumers	Austria, Belgium, Brazil, Czech Republic, Denmark, Finland, France, Germany, Hungary, Portugal, Slovenia, Spain
Price competitiveness	Prices, exchange rates, ratio price/quality “value for money”, taxation	Australia, Belgium, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Norway, Poland, United Kingdom

Accessibility/connectivity	Infrastructure development, geostrategic position of the destination, proximity	Australia, Belgium, Brazil, Chile, Czech Republic, Finland, Greece, Italy, New Zealand, Norway, Poland, Portugal, Slovenia, Spain, Türkiye, United Kingdom
Branding of the destination	Promotion and marketing, identity, image, awareness of the destination, breadth of appeal, market diversification	Australia, Austria, Brazil, Canada, France, United Kingdom
Human resources development	Skills, education and training, labor productivity, tourism training centers	Belgium, Chile, Estonia, Greece, Spain, Türkiye
Natural and cultural resources	Sustainability, gastronomy, climate, biodiversity	Belgium, Brazil, Chile, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Israel, Italy, Poland, Portugal, Slovenia, Spain, Türkiye

Source: (Dupeyras, A. & N. MacCallum, 2013).

In the first of the two seminal reports published by the Muğla Governorship, Erarslan et al. (2010a) used Porter's Diamond Model (see Porter, 1990) and social network analysis methodologies to analyze the international competitiveness of Muğla's tourism sector. Instead of quantitative methods, qualitative methods are used. Primary and secondary data are used. The key methods employed for data collecting include: (i) conducting semi-structured face-to-face surveys, (ii) organizing focus group meetings, (iii) conducting semi-structured interviews, (iv) engaging in field observations, and (v) doing participant observations. Despite the passage of numerous years, the work remains relevant. In the entire analysis, a negative sign in parentheses indicates a low level of competitiveness in the given topic, a positive sign indicates a high level, and a combination of both indicates a medium level.

In another study, Erarslan et al. (2010b) details the tourism sector of Muğla with cluster analysis and then creates a macro strategic planning roadmap. These two studies and the author's views are used when evaluating the competitiveness of Muğla.

Although the study (Erarslan et al., 2010a) analyzed the competitiveness first in the whole sector and then in the fields of traditional tourism, health tourism and alternative tourism, only the traditional tourism (coastal tourism) part is evaluated here.

Government (-/+) T.C. Ministry of Tourism & Culture services (-/+) Incentive system (-) Legal regulations	Firm Strategy and Competitive Structure (-) (-) Firm Strategy (-) Branding and Communication Management (-) Cooperation with Foreign Tour Operators (-) Management Structure of Businesses (-) The capacity utilization rate	
Input Conditions (+) Natural Assets (+) Strategic Location (-/+) Historical Artifacts and Museums (-/+) Faith Tourism (+) Spa Resources (-/+) Information and Human Resources	Muğla Tourism Sector Competitiveness (+/-)	Demand Conditions (+) Status of Incoming Tourists (-) Products of Alternative Tourism (+) State of Domestic Demand

(-/+) Environment and Spatial Structure (-/+) Transportation Infrastructure (-/+) Attitude of Folks towards Tourists		
	Related and Supporting Organizations (-) Condition of Accommodation Facilities (-) Condition of Food and Beverage Facilities (+) Muğla University (-/+) Secondary Education Institutions (-/+) Non-Governmental Organizations (-) Condition of Shopping Venues (+) State of Security (Public Order) in the City (-) Tourist Guiding Services (-) Travel Agency and Tour Operator Services (-) General Management's Perspective on the Sector (+) Public Administration Services (-) Control and Certification Organizations	

Figure 1.22: International Competitiveness Analysis of Tourism Sector in Muğla Province (Medium +/-)

Source: Author's own illustration (based on Erarslan et al., 2010:70)

1.7.1.1. Firm Strategy and Competitive Structure (+/-)

International competitiveness is moderate, and firm strategies and competitive structural circumstances depend on five main sub-variables. The model's sub-variables for firm strategy and competition structure including capacity utilization rate (CUR), management structure of tourist firms, branding and communication management, and collaboration with international tour operators (Erarslan et al., 2010a).

When a firm strategy is assessed in terms of (-), it is assumed that it was developed to actualize cost-oriented competitive strategies and that the tool being used in this context has an all-inclusive system. When the situation is investigated, it becomes clear that the competition is on pricing rather than costs. It has been observed that the all-inclusive approach forces enterprises into a loop that is exceedingly challenging to break in the area. It has been noted that very few businesses use product differentiation and focused strategies. When evaluated in terms of cooperation (-/+) with foreign tour operators, the sector's structure encourages cooperation with foreign tour operators, but they primarily focus on destination-based promotion and sales of

Muğla, neglecting alternative touristic products and not meeting the desired level of cooperation from accommodation operators (Erarslan et al., 2010a). Contrary to what was stated above, the author attributes the ‘all-inclusive’ system of large accommodation establishments to the demands of tour operators and the inadequacy of relevant legislation. In fact, Zopiatis et al., (2020) state that there are great confusions regarding the internality of the contribution of ‘all-inclusive’ hotel management to the growth of the region. All-inclusive hotels also increase waste by offering unlimited food and drink. Food, energy and water consumption are often high.

When measured in terms of branding and communication management, Muğla is rated as (-/+); although, the branding process of Muğla has started in early 80’s, professional branding studies are still in their infancy. Although there have been preliminary investigations on this topic, like in the case of Fethiye, significant advancement has not been made. Due to the large variety of touristic products the destination has, it is challenging for those doing these studies to concentrate on just one or a few products related to tourism (Erarslan et al., 2010a). In traditional tourism (sea-sand-sun), the country's ability to compete depends on producing quality services and branding tourism regions in all aspects, rather than a cheap product image. Taking the necessary steps to shift competition in tourism from price competition to brand competition will be effective both in preserving and evaluating traditional tourism resources and in achieving the expected level of tourism revenues (Erarslan et al., 2010b).

The capacity utilization rate (-) that is, the average occupancy rate throughout the year, is at a rather weak level (30%) (Erarslan et al., 2010a). The tourism season is longer compared to 2010. The main reasons are the increase in average temperatures and the fact that prices are more affordable in low seasons. Therefore, the capacity utilization rates are above 50% in Muğla in 2022 (Republic of Türkiye Ministry of Culture and Tourism dataset, 2022). But still master plans and projections should be created with the right collaborations in other tourism areas such as nature, alternative and sports tourism.

1.7.1.2.Demand Conditions (+/-)

There are two different subvariables that affect demand, and there is medium global competition. The demand conditions in the model are sub-variables like the quantity of tourists and the level of domestic demand. The number of tourists visiting Muğla is rising yearly when measured in terms of the number of incoming tourists. After Antalya and İstanbul, Muğla stands out as the third most popular tourist destination among foreign visitors. Nearly three million (2,984,300) tourists had come here as of 2009. It is clear that the 10-year increase rate is 329 percent given that the number of tourists that arrived in 1999 was 904,587. When the state of domestic demand is measured in terms of (-/+), there has been an increase in interest in conventional tourism products, particularly during the past five years. As hotel occupancy rates have dropped and travel companies have developed packages that provide reasonable rates, long-term payment plans, and early booking discounts, domestic demand has begun to rise. The movement has a beneficial effect on Muğla. The precise extent of the domestic demand for mula cannot be determined statistically, though (Erarslan et al., 2010).

1.7.1.3. Input Conditions (+/-)

In the model, the input conditions are sub-variables such as natural resources, strategic location, level of knowledge and human resources, environment and spatial structure, condition of transportation infrastructure and attitude of the people of the region.

In natural resources manner, Muğla province, with its long sea coast and unique supply data for sea-sand-sun, is a popular tourist destination. Its beaches, 131 coves, and 61 islands contribute to this product. The Mediterranean climate, high sunny days, and rich flora and fauna also support traditional tourism. The province's rich cultural values also contribute to its tourism offerings. (Erarslan et al., 2010).

When Muğla is evaluated in terms of strategic location (-/+), located near Türkiye's southwest, has the longest coastline at 1124 km. Despite its lack of major

cities, its proximity to these areas enhances its strategic position, making it Türkiye's province with the longest coastline. (Erarslan et al., 2010a).

The knowledge and human resource level (-/+) are both average. Muğla offers numerous educational and training facilities for secondary and post-secondary education in the hospitality and tourism industries. The University School of Tourism and Hotel Management and Institute of Social Sciences' graduate degree in tourist management enhance understanding. However, because of the persistently difficult working conditions and seasonal nature of the tourism industry, the amount of knowledge attained and the people resources trained cannot completely contribute to Muğla tourism (Erarslan et al., 2010a). The number of high schools and colleges offering education in tourism subjects has grown, but training deficiencies hinder the sector. To increase productivity and service quality, employees should receive sociological education on human relations and tourist cultural structures, contributing to increased tourist satisfaction and specialized education opportunities (Erarslan et al, 2010b). However, the author does not believe that these analyses and problem determinations are sufficient. In fact, hotels that provide 'all-inclusive' services in the accommodation sector prefer unqualified, low-cost personnel who can work more than 12 hours a day and stay in poor conditions, instead of employing students from tourism schools. They make cost-oriented decisions especially in positions where the qualification requirement is low such as bellboys, waiters, kitchen workers. This causes the exclusion of qualified personnel from the labor market. In addition, operators reduce their operating costs by employing their relatives or fellow citizens at lower prices than the market in souvenir, restaurant and clothing stores. All these cause educated tourism workers to be generally excluded from the market.

When considered in the context of the environment and spatial organization (-/+), the mining, energy, and fish farming industries are those that may negatively influence tourism movements in Muğla. The adverse consequences of fish farms were reduced as a result of the decision taken in 2009 and the actions linked to this decision. The direct negative consequences of businesses other than the Yatağan Thermal Power Plant, Milas Thermal Power Plants, meanwhile, are constrained within the context of

the energy sector. Due to the permits granted in Marmaris and Dalaman, a sector that until recently had no direct impact on tourism activities but is focused on marble mining now runs the risk of harming the environment. The sewerage and garbage storage areas in Muğla's central district and other major districts are free of issues, although the towns' related infrastructure projects have not yet been finished. Domestic garbage, on the other hand, does not now threaten traditional tourist with pollution. Muğla owns 57 blue flag bays, which serve as an illustration of the condition. There isn't a single architectural building in the tourist destinations that stands out and enhances their architectural identities, save from the old Muğla and Ula houses. On the other hand, attempting to replicate the style of old Muğla houses in every Muğla district is not appropriate. For the districts where there are regional disparities, different architectural identities are needed, just like in the Fethiye example. Additionally, household living areas and lodging establishments are linked. The fact that these locations are not divided in the planning studies for building is a weakness. The residents of the area's quality of life are negatively impacted by this scenario (Erarslan et al., 2010a). While the evaluations are still valid today, there is progress in the areas of sewage and waste management throughout the province. While sewage lines have been developed in almost all districts, the number of recycling facilities established with the approval of the relevant ministry and at the initiative of Muğla Municipality has increased. However, problems related to water resource management are experienced more intensely than before. The tourism industry uses water resources excessively due to hotel establishments, swimming pools, golf courses and personal use. Such uses, in addition to producing large amounts of wastewater, result in the disruption of the water supply process and water scarcity. Efforts to protect natural water resources and prevent water waste should be carried out in cooperation between the relevant ministries and local governments. Another notable problem related to coastal tourism is that yachts that dock and organize tours are tied to a tree on the shore with ropes in the bays they dock at due to insufficient buoy and eyebolt facilities, their anchors are thrown into the sea haphazardly, damaging the trees on the shores and damaging the ecology of the seabed. For this purpose, a marine protected areas project should be prepared and implemented in our country, as in Italy (Erarslan et al., 2010b).

Another important fact, which is not emphasized in the studies cited above, is the need for better protection of the seas. The damage that yachts and motorized sea vehicles anchoring in Muğla marinas cause to the sea and the ecology is obvious. In fact, legislation on waste management needs to be tightened and sanctions strengthened.

Being suited for the use of land, air, and sea transport facilities (-/+) puts it in an advantageous position in terms of transportation infrastructure. Direct contact with the outside world is possible, particularly through the ports of Bodrum, Marmaris, Fethiye, and Güllük, as well as Bodrum and Dalaman Airports. Airports at Bodrum and Dalaman also offer connectivity between the region's major cities. With the districts of Muğla, in addition to having a well-developed road network, improvements to the quality of road transportation are still being made. (Erarslan et al., 2010a).

The attitude of the local people is moderate level (-/+). The population generally supports the growth of tourism because they believe it will raise the degree of economic well-being for both themselves and their region. However, there are disadvantages to the frequent attempts to fool tourists and the sale of fake goods, particularly in non-institutionalized firms and certain small tradesmen (Erarslan et al., 2010). The analysis regarding the local people is correct, but incomplete and optimistic. Although hospitality has a strong place in our culture, the local people's trade attitude and ethics need to improve. The lack of price standards in products, pricing policies applied according to the appearance of tourists, amounts demanded far above what is deserved, and attitudes shown to tourists who do not buy are causing great harm to the competitiveness of the region.

1.7.1.4. Related and Supporting Organizations (+/-)

International competitiveness is moderate, and related and supporting institutions (cluster structure) conditions depend on seven different sub-variables. In the model, the conditions of the relevant and supporting institutions (cluster structure) are composed by the conditions of the accommodation facilities, the status of the food and beverage facilities, the services of travel agencies and tour operators, Muğla University, public administration services, activities of non-governmental

organizations, and activities of control-certification bodies and certification bodies (Erarslan et al., 2010a). We mentioned the situation of accommodation establishments (see p.53). Erarslan et al., (2010a) states that the (+) competitiveness of food and beverage establishments is high, there is variety and high quality. However, the author's opinion is exactly the opposite. Although there is no Michelin star restaurant in Muğla except Bodrum, there are very few establishments that can offer local and authentic tastes to tourists at competitive prices. Fish restaurants that offer homogeneous products and services are predominant.

The activities of travel agencies and tour operators in the region are at a high level. TÜRSAB has specific control over companies who perform reception agency services and provide outdoor activity products alongside local tours. Agencies may neglect the qualities of their personnel as a result of their focus on employee costs to cut costs. The lack of large tour operators, which Türkiye occasionally encounters as a roadblock in tourism promotion, is also present in Muğla. Because of this, Muğla continues to depend on foreign countries for the development and promotion of package vacations (Erarslan et al., 2010a).

Erarslan et al., (2010a) emphasizes that the ability of Muğla University to assist initiatives that attempt to be realized within the context of tourism and to produce new projects, in addition to the contributions already mentioned in the information and human resources area, adds to the growth of tourism movements in Muğla. However, as mentioned above, the selection of low-qualified personnel employed in the tourism sector is made entirely according to cost and durability of working conditions.

When evaluated in terms of public administration services (-/+), the planning and implementation efforts of the public administration to improve the tourism infrastructure in the province will turn Muğla into a destination that offers high quality services in the field of tourism. The Muğla Special Provincial Administration's Strategic Plan has major tourism-related strategic goals (Erarslan et al., 2010a). However, as of 2014, 'Special Provincial Administration' units in metropolitan cities were abolished.

The separation of the municipal shares from the central budget without taking into account the fact that they provide services to these tourist destinations has a negative impact on the local services. Additionally, the municipalities' current workforce is too small to maintain services in the tourist hubs year-round in a healthy and continuous way (Erarslan et al., 2010a). A sectoral council should be established consisting of parties that can be effective in tourism, such as the governor's office, Muğla Municipality, Muğla businessmen, civil society organizations, and university representatives. This council should take the lead in creating strategies and implementing these strategies so that the Muğla tourism sector can take part in the global competition race, and the sector should be institutionalized (Erarslan et al., 2010b).

1.7.2. Tourism-Focused Development Plans of Policy Makers

There is no tourism master plan and projection specific to Muğla. However, the 2024-2028 Development Plan (2023) of the Presidency of Strategy and Budget of the Republic of Türkiye and the TR-32 Level 2 Region Development Plans of the South Aegean Development Agency of the Republic of Türkiye (2023) are undoubtedly valid for Muğla.

Table 1.12: Tourism Focused Development Plans

T.C. Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı'nın 2024-2028 Kalkınma Planı	➤ The possible negative effects of tourism activities on the environment will be minimized by taking into account water and waste management and energy efficiency. ➤ Within the scope of the “Sustainable Tourism Program”, studies will be carried out to ensure green transformation in tourism. ➤ An inclusive tourism sector will be created by supporting local economies. ➤ The tourism sector will be supported to adapt to digital transformation in order to gain a competitive structure that can meet rapidly changing demands. ➤ The effective use of digital technologies in the tourism sector will be ensured, and the “seamless end-to-end travel” approach will be brought to the sector by connecting all stakeholders in the tourism value chain in a digital environment. ➤ The technological infrastructure of tourism enterprises, especially micro and small enterprises, and the increase in the digital skill level of employees will be supported. ➤ Working conditions in the tourism sector will be improved and measures will be taken to ensure year-round employment of employees. ➤ In order to increase tourism income per visitor, tourism types that generate more income will be developed.
T.C. Güney Ege Kalkınma Ajansı'nın (2023) TR-32 Düzey 2 Bölgesinin Kalkınma Planı	➤ Pulling the tourism and accommodation sector, which is concentrated on the coastline of the region, to the inland areas and increasing tourism revenues and ensuring that they spread throughout the region stand out as strategic priorities. ➤ It is important for the 2024-2028 Plan period to free tourism types from the pressure of sea-sand-sun tourism and spread them to all four seasons. ➤ Regional tourism development involves balancing natural resources, preserving local culture, enhancing historical and cultural attractions, handling destination management professionally, and utilizing digital promotion methods.

Source: Author's own illustration (based on T.C. Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı, 2023:111; T.C. Güney Ege Kalkınma Ajansı, 2023:37)

CHAPTER TWO

THE COMPONENTS of TOURISM ECONOMICS

2.1. Overview of the Development of Tourism Analysis

There are separate opinions in the literature about the ‘existence of tourism’, ‘whether it is a discipline’ and its epistemological status (see Candela & Figini, 2010:5; Leiper, 2000; Gunn, 1987; Cooper et al. 1998:3; Murphy, 1985; Tribe, 2004:8). Leiper (2000) describes tourism as a discipline of science, Candela & Figini, (2010) describes tourism as a de facto discipline. Cooper et al. (1998) see ‘tourism’ as a subject is demonstrating maturity, evidenced by a burgeoning academic community. Gunn (1987) sees tourism as a field of study. Tribe (2004) from an epistemological perspective is of the opinion that tourism is not a discipline, but tourism constitutes merely a subject of study, albeit one that is significant, prevalent, and extensive.

Tourism is a multidimensional phenomenon that can only be comprehensively accepted through a multidisciplinary approach. Certain disciplines including economics, geography, sociology, management, and history have extensively examined tourism activity (Candela & Figini, 2010:17). The primary themes examined are the cultural, economic, environmental, and social impacts of tourism; travel patterns and modes between origins and destinations; the interrelationship between tourism industry and economic development; tourists' motivations and actions; trend forecasting; and the practical aspects of planning, management, and marketing (Sinclair & Stabler, 1997:4).

Murphy (1985) argues that the tourism sector cannot be considered as such because it does not generate a unique and tangible product. He highlights these specific sectors, such as transportation, lodging, and entertainment, are not just dedicated to tourists, as they also provide similar services to local inhabitants. One notable distinction between tourism and other businesses is that in tourism, it is the consumer who travels to the destination, rather than the product being brought to the consumer. The main implication of this final argument is that the natural and cultural resources

of destinations can be regarded as a type of product, with features that cannot be exchanged in the marketplace.

Sinclair & Stabler (1997:4) emphasize that there was no analytical study on tourism economics until the 1970s. They also emphasize that tourism studies generally did not go beyond ‘case studies’ and were not placed in a theoretical framework. Stabler et al. (2010:424-430) divide the literature on tourism economics into three groups: (1) established research interests, (2) emerging themes and development of methods and (3) themes, issues and methods under-researched in economic tourism studies. These three groups and their subgroups are shared in the table below:

Table 2.1. Tourism Research Fields

Established research interests	Emerging themes and the development of methods	Themes, issues and methods under-researched in economic tourism studies
• modelling of demand and forecasting • structure of tourism supply • effects of the activities of transnational companies • impact of tourism activity at the local, regional and national level: I–O and multiplier analysis • tourism as a form of international trade contributing to foreign currency earnings and the balance of payments • productive and energy resources use and efficiency, waste and pollution • the valuation of unpriced amenity and tourism resources	• demand analysis developments • measurement of the contribution of tourism to economies deriving TSAs • impact modelling using CGE • role of tourism in generating economic development and growth • application of IT to the transport, intermediary and hospitality sectors • competitiveness between countries and destinations at a local level • innovation—largely in the hospitality sector • efficiency and productivity in the intermediary and hospitality sectors • tourism governance • poverty alleviation • globalization	• the application of CBA to the appraisal of tourism development projects • sustainability – conditions to attain and indicators • policy instruments to enhance tourism benefits and mitigate costs • crisis management • inter- and intragenerational equity • definition and conceptualization of tourism

Source: (Adapted from Stabler et al., 2010:427-431)

Candela & Figini (2012:2) add one more column on Table 2.1 under-researched themes into three classifications. (1) the relationship between tourism and the environment, together with its implications for sustainability and intragenerational equity; (2) crisis management in response to several catastrophic terrorist attacks and natural disasters; (3) the definition and conception of tourism.

Above, we briefly mentioned the research areas of tourism, its development and its relationship with other disciplines. In the rest of the chapter, we examine tourism conceptually, historically and theoretically.

2.2. Conceptual Framework: Understanding Tourism

Why do rational individuals travel? What motivates people to engage in touristic activities? According to Harris et al. (2012: 367) "Motivation is the study of why individuals or organisms behave as they do: What gets their behavior started, and what directs, energizes, sustains, and eventually terminates action." In his study where he tried to conceptualize tourist behavior, Dann (1981) briefly defines travel motivation as "Travel as a response to what is lacking yet desired." Tourists are mostly motivated by the desire to discover diverse destinations and acquire unforeseen encounters. Getting away from the routine and daily stress of life, interest in or desire to explore different cultures, developing new social interactions, desire for self-discovery or personal development are some of the motivations for being a part of touristic activities.

Although it is made in different ways in different sources, the statement of 'Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business or other purposes.' by the World Tourism Organization in 1991 is accepted also accepted by UN Statistical Commission in 1993 (Holden, 2008). Another definition is declared by Tribe (2004) is "Tourism is visiting for at least one night for leisure and holiday, business and professional or other tourism purposes. Visiting means a temporary movement to destinations outside the normal home and workplace".

Before diving deeper into the tourism industry, we need some conceptual definitions. Except for the definition of ‘destination’, all concepts are cited from the detailed resource created for politicians and scientists by United Nations World Tourism Organization et al. (2008a) “International Recommendations on Tourism Statistics” that prepared for strengthening countries in the methodological and operational foundations of tourism statistics in an integrated manner :

- ‘Usual environment of an individual’ is defined as the geographical (though not necessarily a contiguous one) within which an individual conducts her/his regular life routines.
- ‘Traveler and travel’ are, respectively, someone who moves different geographic locations for any purpose and any duration and travel refers to the activity of travelers.
- ‘Visitor’ is a traveler taking a trip to a main destination outside his/her usual environment, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited. These trips taken by visitors qualify as tourism trips. Tourism refers to the activity of visitors.
- ‘Tourism’ is a subset of travel and visitors are a subset of travelers. These distinctions are crucial for the compilation of data on flows of travelers and visitors and for the credibility of tourism statistics.
- ‘Tourist (overnight visitor)’ is classified as tourist if his/her trip includes an overnight stay, as we can see from its name. ‘Same-day visitor (excursionist)’ is a traveler if it is otherwise.
- ‘Destination’ refers to territorial system that provides a minimum of one complete tourism product that is designed to meet the complicated needs of the tourist (Candela & Figini, 2012:74).
- ‘The main destination’ of a tourism trip is defined as the place visited that is central to the decision to take the trip. However, if no such place can be identified by the visitor, the main destination is defined as the place where he/she spent most of his/her time during the trip. Again, if no such place can

be identified by the visitor, then the main destination is defined as the place that is the farthest from the place of usual residence.

Tourism business stands apart from other sectors due to its lack of production of standardized tangible products, instead offering services to both local residents and visitors. Hence, the phrase 'tourism industry' refers to a collective of diverse enterprises and institutions that share the objective of offering services to tourists (Holden, 2008). What is more difficult than defining tourism is to answer whether tourism is an industry or a system.

The International Recommendations for Tourism Accounting (2008) categorize tourism and tourist expenditures into basic categories based on the visitor's country of residence and their main destination. This is done to effectively measure the impact of tourism activities and spending on the destination in question.

Table 2.2: Forms of Tourism and Categories Tourism Consumption

Domestic tourism: the activities of a resident visitor within the country of reference either as part of a domestic tourism trip or part of an outbound tourism trip. <i>e.g. If a woman from Ankara goes to İstanbul either for a domestic trip or her main destination is Athens but firstly goes to İstanbul</i>	Domestic tourism consumption: the tourism consumption of a resident visitor within the economy of reference.
Inbound tourism: the activities of a nonresident visitor within the country of reference on an inbound tourism trips. <i>e.g. If a woman from Athens travels to İstanbul</i>	Inbound tourism consumption: the tourism consumption of a non-resident visitor within the economy of reference.

Outbound tourism: the activities of a resident visitor outside the country of reference, either as part of an outbound tourism trip or as part of a domestic trip. <i>e.g. If a woman from Ankara flies to Athens either Athens is the main destination or İstanbul is main destination but she also wants to visit Athens</i>	Outbound tourism consumption: the tourism consumption of a resident visitor outside the economy of reference.
Internal tourism: domestic and inbound tourism, that is, the activities of resident and non-resident visitors within the country of reference as part of domestic or international trips. <i>e.g. If a woman from Athens and the other is from İstanbul travels to Nevşehir, both are internal tourism.</i>	Internal tourism consumption: the tourism consumption of both resident and non-resident visitors within the economy of reference. It is the sum of domestic tourism consumption and inbound tourism consumption.
National tourism: domestic and outbound tourism, that is, the activities of resident visitors, within and outside the country of reference, either as part of domestic or outbound trips. <i>e.g. If a woman from Ankara either travels to Nevşehir or Athens, both are national tourism.</i>	

Source: (United Nations World Tourism Organization, 2008: 15-34)

In the table below, touristic activities are categorized according to their purposes:

Table 2.3: Tourism Activities for Purposes

Personal
Holidays, leisure and recreation
Visiting friends and relatives
Education and training
Health and medical care
Religion/pilgrimages
Shopping
Transit
Other
Business and Professional

Source: (United Nations World Tourism Organization, 2008: 24)

The following table presents the typology of tourism characteristic consumption products and activities grouped into twelve categories that used in the Tourism Satellite Account tables.

Table 2.4: List of categories of tourism characteristic consumption products

Products
Accommodation services for visitors
Food and beverage serving services
Railway passenger transport services
Road passenger transport services
Water passenger transport services
Air passenger transport services
Transport equipment rental services
Travel agencies and other reservation services
Cultural services
Sports and recreational services
Country-specific tourism characteristic goods

Country-specific tourism characteristic services

Source: (United Nations et al., 2008b:42)

Until the 1980s, many studies were conducted on tourist typology (see Cohen, 1972; Cohen 1979; Plog, 1972; Smith, 1977). However, tourist typology is categorized with different methods in the table below:



Table 2.5: Tourist Typology

Model	Tourist	Experience	Demand	Impacts to destinations
Interactional models	Non-institutionalized traveler	Drifter	Search for exotic and strange environment	Little amount because of small numbers
		Explorer	Arrange own trip and try to part from the beaten track	Local facilities sufficient and contact with residents high
	Institutionalized traveler	Individual mass tourist	Travel arrangements organized via a travel agency for renowned destinations	Increasing commercialization and specialization in response to rising demand
		Organized mass tourist	Seek familiarity, travel within the safety of own "environmental bubble," and participate in guided tours.	Establishment of "artificial" infrastructures, increase in foreign investment, diminished local authority
Smith's (1977) model		Explorer	Pursuit of exploration and ambition to engage with hosts	Simple to integrate regarding numerical capacity and accordance to local customs.
		Elite	Exploration of unconventional locations utilizing pre-arranged local amenities.	Small in number and easily adapted into surrounding environments
		Off-beat	Stay away from the crowds	Minor because willing to put up with simple accommodation and service
		Unusual	Frequent excursions to investigate isolated areas or engage in more risky activities	Temporary destinations can be simple but support base needs to have full range of services
		Incipient mass	Travel as individuals or in small groups; tracking a blend of conveniences and authenticity	Rising numbers as the destination gains popularity; escalating demand for services and amenities
		Mass	Middle-class wealth and ideals contribute to the rise of a "tourist bubble."	Tourism now a major industry, little interaction with local

				people beyond commercial links
		Charter	Search for relaxation and good times in a new but similar environment	Massive arrivals; to avoid dissatisfaction; hotels and facilities standardized to western tastes
Cognitive-normative models		Allocentric	Adventuresome and individual exploration	Limited in quantity, engage with local inhabitants
		Mid-centric	Individual travel to areas with facilities and growing reputation	Enhanced commercialization of the visitor-host relationship
		Psychocentric	Coordinated vacation packages to "popular" destinations	Large-scale business, with facilities similar to visitors' home area
Cohen's (1979) models	Modern pilgrimage	Existential	Depart from the realm of ordinary existence and practicality to seek sanctuary in the "elective center" for spiritual nourishment.	
		Experimental	Pursuit of an alternative lifestyle and engagement in the genuine lives of others	
		Experiential	Look for meaning in life of others, enjoyment of authenticity	
	Search for pleasure	Diversionsary	Escape from boredom and routine of everyday existence	
		Recreational	Relaxation to restore physical and mental powers	

Source: (Adapted from Murphy, 1985:6)

There are also studies examining the tourism economy from the perspective of 'leisure time', which is the starting point of utility theory (see Tribe, 2004). Gronau (1977) introduced a study that formalized the distinction between working in the market, working at home, and leisure. This study expressed the decision of individuals to supply labor in a geometric and mathematical manner. As a result, the concept of leisure has become a fundamental element in various subfields of economics. Curiosity in the unfamiliar and the desire for leisure are the driving forces behind the development of the tourist industry. To enhance comprehensibility of these discourses, it is beneficial to include certain definitions:

- Leisure refers to the time that is left after an individual has finished commuting, working, and taking care of personal and domestic tasks, during which they have the freedom to choose how to spend their time.
- Recreation is pursuits undertaken in leisure time. Recreational pursuits include home-based activities such as reading and watching television, and those outside the home including sports, theatre, cinema and tourism (Tribe, 2004).

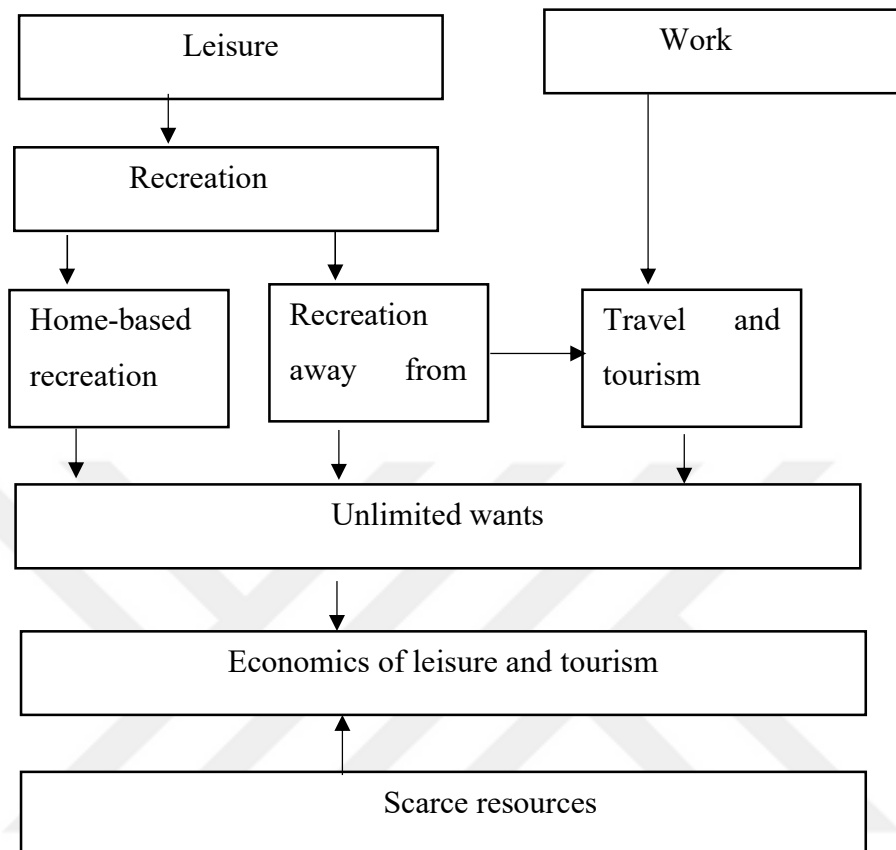


Figure 2.1: The Flow of Leisure-Economics of Tourism

Source: (Tribe, 2004:1)

Before examining tourism in depth from an economic perspective, it is useful to examine the tourism as a system. Laws (1991) argues that viewing tourism as a system has several benefits, including the avoidance of simplistic thinking and the promotion of a multidisciplinary approach. This strategy is advantageous for considering a topic that may be analyzed from various disciplinary viewpoints, such as economics, psychology, sociology, anthropology, and geography.

The diagram presented below encompasses a multitude of diverse components that constitute the tourist system. The inputs depicted in the picture are considered not just from an economic standpoint, but also from a factual and environmental standpoint. Three distinct subsystems exist within the overall system: tourism retailing, destination, and transport. These subsystems include of hotels, tour

operators, airlines, and restaurants that collaborate largely to cater to visitors. The significance of the natural and cultural attractions in the destination subsystem is underlined as crucial factors determining the realization of tourist demand in the region. The outputs reflect cultural change. This phenomenon exemplifies one of the sociological ramifications of tourism. Additionally, it induces alterations in the surroundings. A duality of tourism is recognized based on whether the cultural and environmental repercussions are favorable or unfavorable. The rise in tourist activities within the region may serve as a catalyst for decision makers to prioritize the implementation of sustainable practices in the region or ecosystem. However, it also carries the risk of tourists causing harm and damage to the place. In addition, it may result in women entering a workforce in a location where there is no existing female labor force, thereby leading to an increased vulnerability to being coerced into engaging in prostitution. Similarly, although it generates employment prospects for entrepreneurs and corporations, it can also lead to a rise in inflation. Consequently, policymakers strive to achieve favorable individual, societal, and economic outcomes from the tourism business.

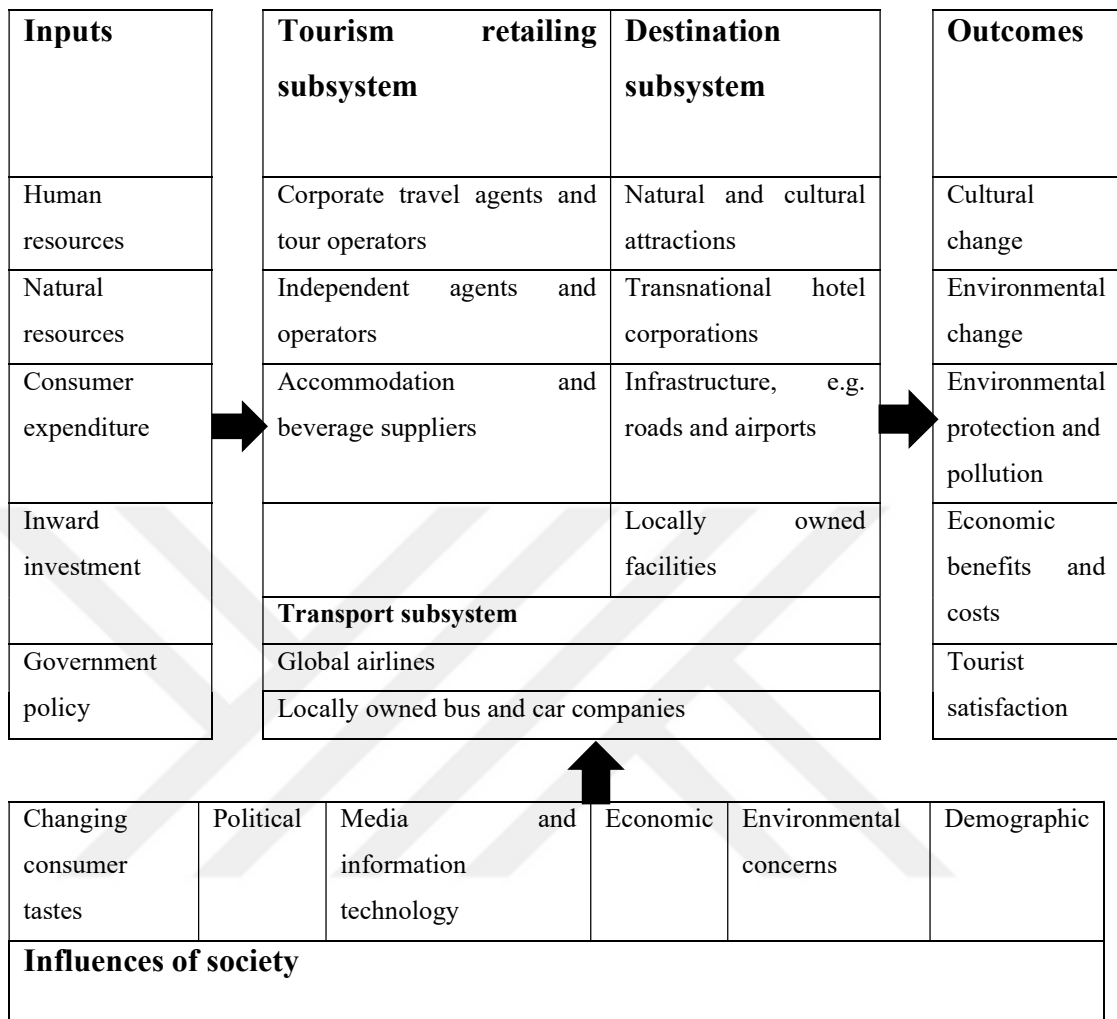


Figure 2.2: The Flow of the Tourism System

Source: (Holden, 2008:9)

As in other sectors, the spread of technology in the tourism industry increases the efficiency in the creation and marketing of relevant products. The next table includes technological developments in the sector:

Table 2.6: Technology Trends in Tourism Industry

Augmented and Virtual Reality (AR and VR): In recent years, there has been a surge in the popularity of augmented reality (AR) or virtual reality (VR) among travel and tourist organizations, and this trend is expected to persist. These technologies are utilized either for content marketing or to augment the customers' experiences. As an illustration, airlines have implemented virtual reality (VR) technology to provide

travelers with a preview of the cabins, with the aim of boosting sales of tickets and additional services.

Artificial Intelligence (AI): Artificial intelligence (AI) plays a significant role in driving advancements and developments within the travel and tourism industry. The industry benefits from AI in three main categories: machine learning, ChatBots or TravelBots, and robotics. AI enables the automation of tasks that typically necessitate human involvement and extensive learning periods to acquire new abilities. This results in accelerated processes, enhanced quality and performance, and reduced costs.

Internet of Things (IoT): The Internet of Things (IoT) holds significant potential to influence the future of the travel and tourism sector, and businesses are beginning to recognize this. Lufthansa is an industry player that utilizes IoT technology to alleviate worry and tension caused by missing bags.

Passengers have the ability to monitor the whereabouts of their luggage by accessing a hyperlink located on their mobile boarding pass within the Lufthansa application.

Voice technology: Voice technology is an emerging digital innovation that is starting to cause significant changes in the travel and tourism industry. This is due to the increasing number of customers who are transitioning from traditional written searches to voice-based interactions. Hotels have also begun to conduct trials with voice-activated gadgets.

Wi-Fi connectivity: While traveling, individuals desire constant connectivity in order to obtain destination suggestions, explore possibilities for places to visit or dine, and access directions to locations of interest. Additionally, they seek to share their experiences with others through social media or other connectivity platforms. Companies can enhance customer experience, improve operational efficiency, and enhance security by investing in network services. This includes implementing CCTV for physical security and strengthening cyber security measures to protect data privacy. Additionally, network services enable real-time decision making.

Wearable devices: Despite an initially slow beginning, travel and tourism organizations are progressively utilizing this technology to provide customers with a more customized and cohesive experience. As an example, the Disney Company

implemented a wearable device called the MagicBand. This device is customisable and equipped with RFID technology. It is used to link to the theme park's infrastructure in order to decrease waiting times and monitor the whereabouts and activities of guests.

Source: Author's own illustration (based on GlobalData, 2018 <https://www.globaldata.com/media/technology/top-6-technology-trends-watch-travel-tourism-industry-2018/>)

2.3. Historical View of Tourism

Although there are not many studies examining the historical development of tourism, the existing studies have divided history into certain sections (see Christou, 2022; Zuelow, 2016).

In their extensive study, Matias et al. (2011:3) highlight humanity's boundless quest for exploration by drawing a parallel to the Argonauts from Greek Mythology. The Argonauts braved the challenging and unfamiliar conditions of crossing the Bosphorus and sailing to the Black Sea in search of something. He describes modern tourists as contemporary argonauts. The primary distinction from previous Argonauts is that tourism has evolved into an accessible endeavor, enabling almost anybody to participate as a tourist in some way. The liberation of tourism was a component of a maturation process facilitated by significant economic advancement and the concurrent emergence of the welfare-leisure society. The process was assisted by the advancement of efficient transportation technology, the resulting decrease in transport costs, the overarching globalization tendencies towards a borderless world, and the introduction and evolution of ICT systems.

Christou (2022:12-27) emphasizes that travel practices in ancient history (9000 BC-AD 650) were carried out for religious, military, sporting competition and commercial purposes rather than tourism. The term "ancient history" encompasses the chronological span during which scholars have discovered the oldest evidence of human endeavors, concluding with the decline and collapse of notable civilizations, such as the Western Roman Empire in the Mediterranean region. In ancient times, individuals embarked on journeys away from their usual homes for a multitude of reasons, primarily motivated by migration and military objectives. Additional factors

that contributed to the phenomenon were the involvement of other forces, such as trade, spectacle games, and participation in festivities. Furthermore, religious motivations, exemplified by the practice of tirthayatra (pilgrimage) in India, also played a significant role. The ancient Romans constructed a highly efficient network of roads that facilitated the connection between their metropolis and its distant frontiers, thereby giving rise to the popular adage "all roads lead to Rome." The establishment and utilization of routes such as Via Appia cannot be attributed only to military movements, as they also played a significant role in promoting interregional trade. Consequently, these routes facilitated the movement of both people and goods. In close proximity to these highways, inns and taverns were constructed at regular intervals to cater to the requirements of travelers. Moreover, throughout millennia, individuals have embarked on journeys to revered locations primarily driven by religious motivations, with the intention of participating in religious ceremonies of significant magnitude and partaking in rituals or acts of sacrifice. Ancient religious or ritual centers can be discovered in various places, including Egypt and Malta. During the First Temple period, Solomon's Temple was erected in Jerusalem. Upon its completion, King Solomon extended invitations to anyone to journey to the temple for the purpose of engaging in prayer. The western wall of the Temple continues to hold considerable significance in contemporary times. During ancient times, oracles played a significant role in providing guidance and prognostication to individuals, typically through the practice of divination. The act of seeking guidance on personal concerns was a customary practice within ancient civilizations, exemplified by the oracle of Apollo at Delphi in Greece. In ancient times, individuals would frequently go on journeys with the purpose of visiting "oracles of the dead," which were commonly situated within caves linked to the entrance of the underworld. In these locations, individuals were expected to descend into the realm of the afterlife and reunite with their deceased loved ones. The human need to establish a connection with deceased individuals, pay tribute to them, commemorate their lives, and rekindle a sense of optimism has been evident for countless millennia. The ancient Egyptian tradition known as the 'Beautiful Feast of the Valley' was a commemoration of deceased souls. This festival exhibited certain resemblances to other cultural observances such as the

Chinese 'Ching Ming Festival', the Japanese 'Bon Festival', and the Mexican 'Day of the Dead' (Día de los Muertos), which is often depicted as a manifestation of rural cultural tourism. In addition to the aforementioned event, it is worth noting that the ancient Egyptians regularly commemorated numerous other festivals throughout the Old, Middle, and New Kingdoms. One such example is the 'Wepet Renpet' festival, which symbolized the commencement of the new year. Festivities and celebrations were observed globally by diverse civilizations, including the ancient Romans who organized festivities to pay homage to their deities and the divine. Notable examples include the 'Veneralia', 'Mercuralia', and 'Saturnalia'. The event known as the 'Roman Carnival' was documented in 1788 and was observed to have a vague connection to the ancient pagan celebration called Saturnalia (Christou, 2022).

In contemporary times, the observance of carnival festivities throughout many regions may be linked to the cultural identity of a particular location, while in other instances, it may possess a global nature that hinders the prominence of local elements. Similar to the historical occurrence of Saturnalia, a carnival event has the potential to instigate a reversal of social hierarchies, resulting in a temporary state of liberation characterized by the celebration of bodily indulgence and the heightened emphasis on sexual expression. This phenomenon, commonly referred to as the 'carnavalesque,' is often associated with disorderly behavior and the occurrence of misconduct among tourists. This period also seen the emergence of athletic competitions, notably the Olympic sports, which hold the distinction of being the oldest among the four primary Hellenic sports. During the ancient Olympic Games, a period of temporary ceasefire, sometimes referred to as a 'truce', was declared. This truce aimed to guarantee the safe passage of athletes, tourists, and pilgrims to and from the city of Olympia. During the ancient Roman era, an additional category of entertainment emerged known as the "arena spectacle." This form of amusement encompassed many activities such as brutal gladiator battles, confrontations with untamed creatures, and the public exhibition of horrific fatalities. These events were witnessed by an enthusiastic audience, who expressed their approval by cheers and applause (Christou, 2022). Although a significant number of Romans likely traveled as merchant traders or in the context of

military service, others followed a well-established tourist route to Greece and Egypt or spent their summers on the coast. Rome was at its most prosperous during the Augustan period. During the Augustan period, Rome experienced prosperity due to trade and occupations. The empire's boundaries were the Scottish frontier, Africa, and Persia. Roman armies built roads for swift troop movement, commerce, and leisure travel. Wealthier Romans traveled to Greece, Asia Minor, and Egypt, visiting sites like Delphi, Athens, Delos, Samothrace, Rhodes, Troy, and the Valley of the Kings. Roman tourists also visited sites for health, oracle observation, sporting events, and ruins (Zuelow, 2016:7).

The post-classical era, often known as the medieval period or the Middle Ages in Europe, spans from approximately AD 500 to AD 1500. During this period, individuals embarked on extensive and challenging journeys to religious sanctuaries and sites of spiritual significance throughout various regions, including England, Jerusalem, Kumano (Japan), and the islands devoted to the Sun and the Moon in Lake Titicaca, situated on the border of Peru and Bolivia. During this particular time frame, there are observable indications of large-scale pilgrim movements, wherein individuals engage in collective travel for religious objectives. One notable example is the Islamic pilgrimage to Mecca, located in Saudi Arabia, commonly referred to as the 'Hajj'. The pilgrims enhanced their religious journey experience by acquiring modest trinkets and goods, so making their experience more tangible. The Maya people residing in Central America annually conducted a festival to pay homage to Ek Chuah, who was revered as the guardian deity of cocoa. The ceremonies encompassed the act of presenting and partaking in the delicacy, which is presently made available to tourists through chocolate festivals, factory visits, and train tours. The culinary culture and scene in Europe were significantly impacted by medieval monasteries, as they adopted meal preparation procedures that emphasized the use of locally sourced and fresh foods, community dining, and adherence to proper table manners. In contemporary monasteries, particularly in Greece, the practice of providing communal meals, unwavering hospitality, and the preparation of freshly produced food for guests endures as a lasting tradition inherited from the Byzantine period. In December 1434,

the citizens of Dresden, Germany were provided with the opportunity to partake in a one-day open-air Christmas market, where they could indulge in local delicacies. This event marked the inception of a time-honored custom known as "Christmas markets," which have since become particularly prevalent throughout Central Europe. Similarly, food markets have become significantly engaged in providing support to the local community, particularly in relation to farmers and local producers. Floating markets in South-East Asia have consistently maintained their popularity among both local residents and tourists worldwide. These markets, which come in many forms, have continued to attract a significant amount of attention. These markets provide visitors with opportunities to engage with local producers and partake in culturally significant and authentic gourmet experiences, so creating lasting memories. However, post-classical eras are sometimes characterized as a "cruel period," especially in Europe. Individuals living in this particular era bore witness to the infliction of torment and the brutal demise of fellow human beings, which were presented as public spectacles. The promotion of Viking history tourism in Scandinavia has mostly focused on presenting an authentic portrayal of the Vikings, who were known for their organized society. This is achieved through the establishment of heritage centers, seasonal trading fairs, and markets, which are further enhanced by tourist activities (Christou, 2022: 30).

Zuelow (2016:22) defines 'Grand Tour' as: "Between 1748 and 1789, the Grand Tour was a significant event in Europe, attracting young Englishmen and women to various cities. The tour served as a rite of passage, focusing on education and preparing future leaders with a comprehensive understanding of foreign languages, customs, politics, and culture. However, it also reflected a hedonistic approach, transforming the journey into a secular ritual of commodification and consumption.". The Early Modern Period refers to the initial phase of the Modern Period, encompassing the time period subsequent to Christopher Columbus' journey in 1492 and the subsequent formation of a more interconnected global network. This era concludes in the year 1750. Certain individuals who resided throughout the latter stages of this era bore witness to the evolution of certain types of dining establishments that have resemblance to the modern-day restaurants. The establishment known as

Restaurante Botín, established in 1725 in Madrid by Jan Botín, a French chef, engaged in the practice of preparing meals brought in by patrons due to the prohibition on selling food, which was deemed detrimental to other enterprises (Marples, 2020). During this historical period, there was a notable emergence of the 'Grand Tour', which was predominantly done by affluent members of society in continental Europe. The primary motivations behind embarking on such a journey were to partake in cultural experiences, pursue educational opportunities, and get enjoyment from the overall experience. The tour frequently encompassed a whole itinerary of Europe, with a primary focus on France, Italy, Germany, Switzerland, and the Low Countries. It was predominantly conducted by those from the United Kingdom, although not solely (Christou, 2022).

This particular period in the evolution of tourism marked the establishment of travel patterns and itineraries. The establishment of early forms of museums also occurred. The earliest documented visit to the Tower of Armouries in London occurred in 1498, while in around 1660, the general public was granted access to observe the grandeur of the English monarchy. The Capitoline Museums in Rome were established in the early 1700s, with their origins dating back to 1471. However, it was during the early 1700s that these museums were made accessible to the general public. Several museums were established in several European countries, including Switzerland, Russia, Austria, France, and Spain, during the 17th and 18th centuries. Additionally, in the early 19th century, the Indian Museum and several others were established. During this particular era, specific municipalities such as Florence were esteemed as "open museums" whereby visitors had the opportunity to stroll and appreciate the architectural marvels of edifices, sculptures, and fountains, as well as engage in musical gatherings. Numerous cultural villages and small towns across the world have preserved their distinctive local architecture and traditional dwellings, exhibiting few alterations since their establishment. For example, the town of Kakunodate in Japan, noted for its 'Samurai District,' has remained unaltered since its establishment in 1620. It has gained recognition as a popular tourist destination for both local and foreign travelers. Open-air museums currently exist in many forms, with some exemplifying

the lifestyles of past eras. For instance, the Norsk Folkemuseum in Norway is dedicated to the era spanning from 1500, emphasizing an open-air setting. In contrast, Plimoth Plantation in Massachusetts, USA serves as a living-history museum that recreates the 17th-century English colonial community (Christou, 2022:45).

The Late Modern Period, sometimes known as the second third of the modern period, encompasses the time span from 1750 to 1945. During this particular era, prominent tour operators like as Thomas Cook, alongside national tourism organizations like those of New Zealand and France, came into being. Thomas Cook is a British entrepreneur who is considered the founder of modern tourism. With his innovations in the travel and tourism sector in the 19th century, he became the world's first organized package tour operator and played a leading role in the transformation of tourism into a mass industry. The first domestic tour experience known in history was carried out by train in England in 1841. In 1855, Thomas Cook carried out the first international group travel with a tour from England to France. This tour included European cities such as Paris, Brussels and Germany. The year 1886 marked the emergence of the contemporary automobile, which, despite its significant impact on the socioeconomic aspects of individuals' lives, also assumed a pivotal role within the tourism sector, particularly in facilitating road tours and excursions. During this period, there was a notable increase in the development of railway networks in countries such as Britain, Switzerland, and India. The significance of railways for economies, as well as the travel and tourist sector, has been emphasized in several studies, particularly in recent decades. Currently, the implementation of high-speed rail systems has been found to have a positive impact on the number of tourists visiting regional tourism economies in countries like China and Japan. Furthermore, developments in train technology have the potential to incorporate augmented reality games, thereby enhancing the overall experience for passengers. In certain instances, the train or voyage itself has a central role in shaping the visitor experience. In such instances, the railway journey is enhanced by the inclusion of opulent furnishings or nostalgic design elements, all while traversing picturesque routes. Several instances of experiencing trains are Puffing Billy in Australia, the West Highland Line in Scotland,

and the Belle Epoque in Switzerland. During this particular era, the concept of "luxury" was effectively integrated into the realm of hospitality and travel. However, it was predominantly accessible only to the privileged few who possessed the financial means to afford the exorbitant rates and fares associated with such services. The Orient Express, a renowned train in Europe, was renowned for its association with sophistication, personalized service, and an extraordinary gastronomic encounter. During the historical period in question, the Titanic, an ocean liner, was renowned for its opulent amenities, which were on par with the luxurious offerings of the most esteemed hotels worldwide. These amenities included exquisite dining options, Parisian-style cafes, facilities for playing squash, a swimming pool, and lavishly designed accommodations that adhered to the highest standards of quality. During the early 20th century, the establishment of passenger airlines was initiated in several nations, including Britain, France, Germany, the Netherlands, and Australia. However, it was not until the conclusion of World War II that the airline sector experienced significant growth and prosperity. The Late Modern Period was characterized by the occurrence of two World Wars, a pandemic known as the 'Great Influenza epidemic,' and a significant worldwide economic slump referred to as the 'Great slump.' These events had a profound impact on humanity and consequently affected the tourism sector. The commencement of World War I in 1914 had a significant impact on transatlantic travel, leading to the stranding of numerous American tourists in Europe. An alternative form of tourism occurred during the period of conflict. During their deployment in Egypt and Palestine throughout World War I, British soldiers engaged in the exploration of various sights and landmarks, capturing moments through photography and acquiring postcards with the purpose of subsequently sharing these experiences with their loved ones and acquaintances (Christou, 2022:56). Zuelow (2016) focuses on steam when talking about this period. He states that Steam facilitated the development of novel leisure travel options. Excursions, which were short-day and overnight journeys that were designed for the working class, were made feasible by the development of railways, which enabled an increasing number of promoters to create them. The seaside quickly became a favored destination. Middle-class visitors embarked on extended excursions. A greater number of Americans could realistically

aspire to travel to Europe, and Europeans could visit the United States—or virtually any other location that the great nineteenth-century "age of imperialism" made accessible. These aspirations were transformed into reality by package tour companies, which developed well-organized, all-inclusive group tours that utilized both steamships and railways. These tours would transport the apprehensive globetrotter to virtually any destination, and they were increasingly popular among women. Tourism was expanding globally, and an increasing number of guidebooks were published to inform individuals about the best places to visit, activities to engage in, and how to execute them. Steam paved the path for the widespread adoption of tourism.

Individuals who had actively participated in the First World War afterwards made their way back to the locations where armed conflicts had taken place, as well as the areas that had served as battlegrounds, accompanied by their loved ones and acquaintances. Soldiers from the Australian and New Zealand Army Corps (ANZAC) who were in combat against the Ottoman Empire began making visits to the Gallipoli Peninsula in Türkiye, the site of the aforementioned battles. Regrettably, the global occurrence of the Great Depression in the 1930s resulted in a decline in tourist numbers and a suspension of tourism development worldwide. However, it is noteworthy that the practice of "holidaymaking" shown notable resilience in some places, such as Scotland, throughout this particular era. The period spanning from 1939 to 1945 was marked by the occurrence of World War II. The influx of refugees, notably in Europe and the Asia-Pacific region, resulted in a substitution of leisure travelers. Additionally, those who had the potential to engage in tourism were compelled to reside in ghettos and concentration camps. During this period, the majority of European countries experienced a shift in the composition of their tourist population, with traditional tourists being gradually supplanted by a new category known as "soldier tourists" or "tourists in uniform." Adolf Hitler and the Nazi regime assumed a dual role upon their arrival in France, simultaneously acting as conquerors and visitors. They engaged in the customary practice of touring prominent sights and buildings in Paris, capturing the experience through the medium of photography. During the interwar period, a comparable surge in travel trends emerged subsequent to the conclusion of World War

II. Military personnel resumed their duties at combat sites and battlefields, while the bereaved relatives of fallen soldiers paid visits to war graves. In due course, the aforementioned battlefields and sites associated with warfare evolved into sites of remembrance and contemplation, eliciting from their visitors a range of emotions such as sadness, pride, horror, guilt, and nostalgia. Despite the devastating consequences, both World War I and World War II resulted in the establishment of concentration camps, ghettos, and memorials that continue to draw visitors and serve as significant historical, educational, and contemplative landmarks for humanity. In numerous instances, locations that are connected to the somber chapters of human history are accompanied by tourist centers and museums that frequently offer an educational and historical narrative, while simultaneously serving a commercial purpose, such as the selling of souvenirs (Christou, 2022:57).

The contemporary period spans from the 1940s up to date. The 1940s-1960s was marked by a distinct phase of economic growth characterized by mass manufacturing and consumption, which resembled the economic systems of developed countries. During this time, there was a notable increase in the prominence of the airline sector. During the early 1940s, Qantas Empire Airways introduced the world's longest non-stop air route, spanning from Ceylon (Sri Lanka) to West Australia. During the period of World War II, the majority of airlines in Europe suspended their operations, while airlines globally redirected their efforts towards the evacuation of individuals from conflict zones and the training of military pilots. In the aftermath of the conflict, the international aviation sector experienced significant growth and prosperity. As an illustration, in 1946, Delta Air Lines successfully facilitated the boarding of its one-millionth passenger (Christou, 2022:76).

The narrative underwent a transformation subsequent to the conflict. Tourism emerged as one of the most prominent industries in the world within a mere forty years. Living standards attained previously unimaginable levels by the conclusion of the 1950s. The concept of holidays with pay gained traction, and numerous states extended paid vacation days to levels that were significantly higher than those that had been mandated prior to the onset of hostilities. There were additional incentives for

individuals to travel, in addition to the availability of leisure and money. The development of new technologies, which were frequently the result of the war endeavor, enabled individuals to relocate at a reduced cost. The United Nations, as well as the majority of state administrations, once again promoted political calculation regarding the industry. The number of resorts increased, and private companies sought to broaden the selection of attractions. The new opportunities were eagerly anticipated by millions (Zuelow, 2016:150).

Zuelow (2016) states that by the end of 1945, the US was the only superpower that had not suffered a major blow, and emphasizes that it provided great aid to the wounded European countries so that the approaching threat of the USSR would not convince the people. The European Recovery Program and the Marshall Plan are some of the aids mentioned. Tourism is also one of the basic complements of the ERP. Because, the US created abundance by printing money after the war, and made it attractive for its own citizens to travel to continental European countries with its push policies. Zuelow (2016) emphasizes that the tourism industry was particularly captivating due to its dual benefits: the potential to "stimulate the export of commodities to America" after an American tourist familiarizes themselves with European goods, which he or she may then help to create a demand upon his or her return to the United States. This included the ability to purchase European products while traveling. Marshall Plan officials and the member countries of the Organization for European Economic Co-operation (OEEC) recognized tourism as a fundamental component of a sustainable economic future, given the substantial amount of material that needed to be incorporated into the reconstruction process.

Subsequently, in the 1990s, the liberalization of air transport in Europe resulted in the relaxation of earlier restrictions on flying and pricing. This, in turn, led to a substantial increase in air travel and a remarkable expansion of low-cost carriers. These figures represented approximately 20% of the overall air transportation capacity in several places across the globe. It is noteworthy that the aviation business has demonstrated both vulnerability and resilience in the face of various crises. Indeed, the organization has encountered and continues to confront a multitude of significant

issues that have posed a threat to its long-term viability and fiscal stability. Furthermore, during the initial part of the 20th century, there was a proliferation of amusement and theme parks worldwide that were greatly influenced by the original Luna Park located at Coney Island in New York, as well as the inaugural Disney theme park in Los Angeles, which commenced operations and welcomed visitors in the mid-1950s (Christou, 2022).

Tourist and hospitality sector meet "quality" concept after 90's. The perspectives held by individuals have had a significant impact on the implementation of practices and protocols within the tourist and hospitality sector. In the year 1946, representatives from a total of 25 nations convened in London with the purpose of engaging in discussions pertaining to International Standardization. Subsequently, the International Organization for Standardization (ISO) was officially established in the subsequent year. The significance of attaining and sustaining the level of excellence in services, products, and experiences has become a crucial factor for destinations, travel, hospitality, and tourist enterprises. The reason for this phenomenon is that high quality has the potential to generate satisfaction, which can afterwards result in favorable customer intents and enhanced destination/company image. This, in turn, fosters loyalty and has the potential to drive additional sales (Christou, 2022:76).

During the late 1960s and early 1970s, there was a notable emergence of a social counterculture movement known as "hippies," primarily consisting of young individuals. Frequently, individuals identifying as hippies would undertake extensive voyages originating from major European cities, proceeding towards the Greek islands, and afterwards traversing a Central-Asian route encompassing nations such as Iran, Afghanistan, and Pakistan, with the ultimate objective of reaching India and Nepal. In 1970, the process of the decline of adulthood was arguably just beginning, and it did not occur immediately. However, the tourism industry was able to promptly adapt to evolving consumer preferences by creating a global realm of "cool" attractions. The issue is that what is fashionable one minute may be considered outdated the next. The latest tourist attraction is unable to remain trendy indefinitely, just as youth movements have a limited lifecycle in which they initially appeal to a

small "subculture," attract popular attention, draw in a growing number of individuals who are eager to be a part of something exciting and cutting-edge, and then arrive as mainstream, thereby losing their coolness. Throughout the decades of the 1980s, 1990s, and 2000s, there was a significant rise in the popularity and influx of tourists to tiny places, particularly coastal areas and island states, that offered the attractive combination of "Sun, Sea, and Sand." These destinations had extraordinary growth in terms of visitor arrivals (Christou, 2022; Zuelow, 2016:175).

The surge in demand for lodging, infrastructure, and other amenities to cater to the needs of tourism in specific locations was substantial, resulting in significant strains on their natural and social ecosystems. Consequently, a sequence of meticulously planned and synchronized acts of terrorism in the United States on the morning of September 11, 2001, inspired widespread apprehension and anxieties pertaining to international travel (Christou, 2022).

Regrettably, these attacks persistently exert significant adverse socio-economic consequences on destinations. Nevertheless, the influx of tourism persisted, resulting in both beneficial and detrimental effects on the destinations. Academics have expressed worry on the detrimental effects of tourism, particularly since the 1970s. In response, they have undertaken a theoretical exploration that encompasses concepts such as "carrying capacity" and "sustainability." In the subsequent decades, there was a noticeable increase in the emphasis on environmental sustainability within the sector. This trend gained popularity among scholars, industry professionals, and tourist destinations. However, it is important to note that during the 2000s and 2010s, specific areas still faced significant consequences, primarily attributed to hasty and poorly planned tourism expansion, as well as unsustainable practices within the tourism industry. However, the late 20th and 21st centuries have shown a notable increase in several specialized forms of tourism that cater to the specific interests of tourists, like film and gastronomy tourism. Moreover, the onset of the 2010s marked the significant emergence of the Airbnb phenomenon, which had achieved the milestone of one million nights booked by 2011. The phenomena garnered the interest of local residents,

visitors, and scholars due to its significant expansion in subsequent years throughout over 220 nations and territories worldwide (Christou, 2022).

Travel and hotel booking companies incorporate the attribute of "cleanliness" as a criterion to provide potential visitors with information regarding the sanitation protocols implemented by these establishments. Tourism organizations implemented dynamic marketing strategies that incorporated gratis rebooking arrangements, special promotions, and significantly reduced tariffs in order to ensure their financial viability, prioritizing sustainability over profitability. The utilization of technological advancements, particularly virtual reality, has demonstrated significant utility throughout the ongoing pandemic. Various destinations, tourism enterprises, museums, heritage sites, and parks have provided individuals with the opportunity to engage in virtual flights, tours, concerts, and other immersive experiences. In spite of these efforts, there was an increase in domestic tourism demand due to the resurgence of certain trends such as "slow tourism," which involves taking holidays closer to one's place of residence and valuing these experiences. Additionally, road trips, health and wellness vacations, and prioritizing the quality of travel and travel experiences over quantity contributed to this growth (Christou, 2022:104).

2.4. Why is “Tourism” Important?

Recently, there has been a noticeable trend where tourism has emerged as a significant component of countries' or regions' strategies for economic expansion and progress. Prestigious tourism development projects are planned and executed in various locations with the expectation that the future earnings would outweigh the expenses. Thailand has undertaken multiple tourism-focused development initiatives, such as the advancement of cultural tourism, ecotourism, and beach resorts (see “Amazing Thailand” campaign). Spain has made significant infrastructure investments to increase tourism earnings in coastal areas and popular destinations (Barcelona, Madrid and the Balearic Islands). Maldives, known for its luxury resorts and pristine beaches, also sees tourism as one of the primary sectors in their economic development. The nation has executed initiatives to improve amenities at resorts, save

marine ecosystems, and advocate for sustainable tourist practices. Rwanda has placed tourism as a top priority in its strategy for growth after the conflict, with a specific emphasis on wildlife tourism, cultural tourism, and eco-tourism. The country's endeavors to safeguard mountain gorillas in Volcanoes National Park have enticed global tourists and produced income for conservation initiatives. Costa Rica has adopted ecotourism as a method for sustainable development, actively marketing its abundant biodiversity and natural attractions. The government has undertaken steps to create national parks, designated areas for conservation, and environmentally-friendly accommodations, while also allocating resources to support community-driven tourism projects. The United Arab Emirates, especially Dubai and Abu Dhabi, have made gigantic amounts of investments in the development of tourism infrastructure, comprising ultra-luxury hotels, expansive retail centers, amusement parks, cultural landmarks and many things that can attract the attention of tourists and make their travel easier. The nation's tourism initiatives seek to allure global tourists and broaden the economy's scope beyond its reliance on oil. When formulating policies for the tourism industry, it is crucial to possess the ability to precisely assess socio-economic achievements and adhere to a robust methodology. Developing the suitable approach for academic academics seeking to quantify the effects of tourism is a highly challenging task. When assessing the tourism industry, it is important to consider factors such as the country's balance of payments, the influence of regional growth on excess income and unemployment, and the generation of public money.

It is useful to emphasize the economic contribution of the tourism industry regionally, nationally and globally with statistical data. According to the latest report of WTTC (2024), the contribution of tourism (sum of the direct and indirect contributions) to the global economy in 2023 is:

- 9.1% of global GDP (9.9 TN \$)
- 10% of global jobs (330 MN jobs).

The goods and services on the supply side of the tourism industry are consumed by residents, and residents employed in the tourism service sector also purchase their

own needs with the wages they earn in the tourism sector. This makes the methodological framework related to tourism more complex. The following table describes the economic contributions of Tourism & Travel:

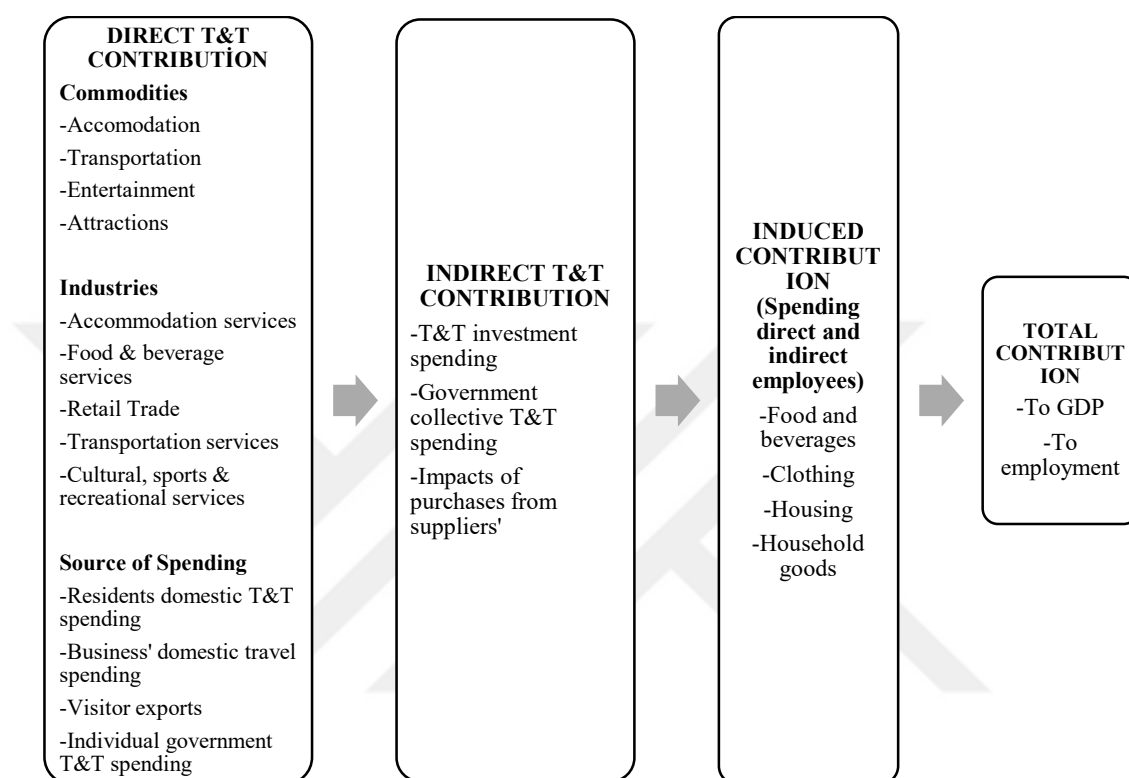


Figure 2.3. Definon of Contribution of T&T

Source: (T&T Council, 2024:3)

The direct contribution of Travel and Tourism (T&T) encompasses the aggregate expenditure within a specific country by both residents and non-residents for business and leisure activities, in addition to government spending on T&T services directly associated with visitors, such as cultural institutions (e.g., museums) or recreational areas (e.g., national parks). It equals to tourism GDP resulting from direct tourism characteristic sectors such as hotels, airlines, airports, travel agents, leisure and recreation services (WTTC, 2024:3).

The indirect contribution of T&T constructed by T&T investment spendings, government collective T&T spendings and impacts of purchases from suppliers'. First one a significant aspect of both present and future endeavors encompassing investment

activities such as new aircrafts and construction of new hotels. Secondly 'Government collective T&T spending' that promotes Travel & Tourism activities in various ways, as it is conducted on behalf of the broader community. Domestic purchases of products and services by industries directly interacting with visitors, such as hotels' acquisition of food and cleaning services, airlines' acquisition of fuel and catering services, and travel brokers' procurement of IT services (WTTC, 2024:3).

'Induced' contribution covers the spendings incurred by employees working in companies operating directly or indirectly in the tourism industry.

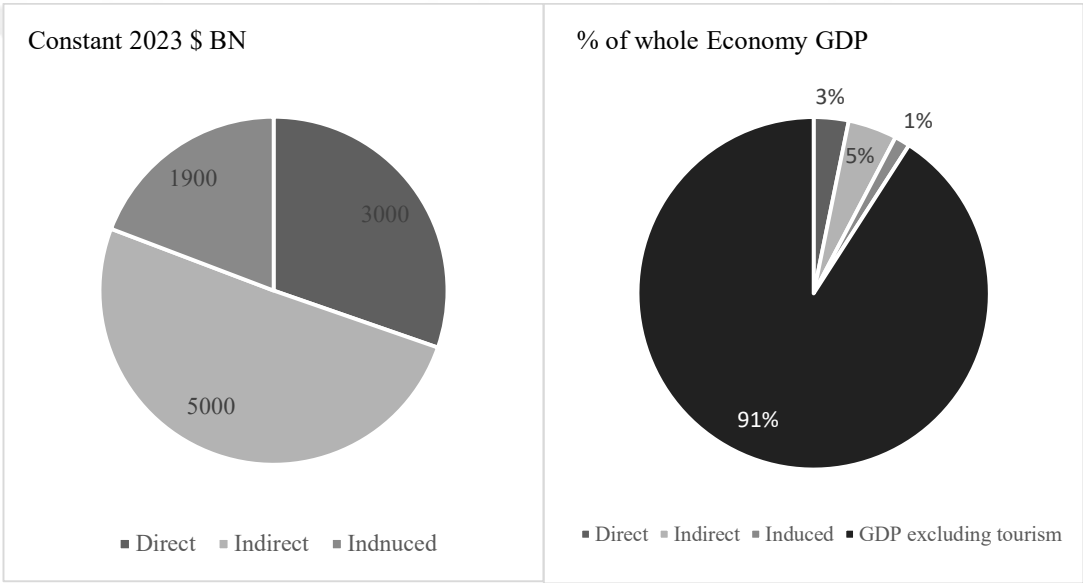


Figure 2.4: Total Contribution of T&T to GDP, 2023

Source: (WTTC, 2024: 4)

The indirect contribution magnitude is bigger than the others. The contribution of reinforced concrete structures such as airports, accommodation facilities built by private or state enterprises, and the manufacturing of travel planes to GDP is higher than the others. The lowest is the ‘induced’ item, which shows that the contribution of the expenditures made by employees in tourism goods or services is lower.

The economic contribution of tourism is not limited to GDP and employment alone. Other contributions are listed below (WTTC, 2024; Dwyer et al. 2020):

- Revenue from taxes,
- Supply chain enhancement,
- Foreign Exchange earnings,
- Boost local businesses,
- Investments and infrastructure development.

2.5. Economic Theory of Tourism

2.5.1. Macroeconomic Approach

United Nations et al. (2008a; 2008b) 'Tourism Satellite Account: Recommended Methodological Framework' and 'International Recommendations for Tourism Statistics' sources are used because they set an international standard in displaying macroeconomic calculations.

First, we start with the methodology of collecting tourism magnitudes from a demand perspective. Before starting the calculations, let's emphasize that the terms 'tourism expenditure' and 'tourism consumption' are different from each other:

- Tourism expenditure: It refers to all expenses made by tourists during their trip. It is equivalent to the amount of money that comes directly out of tourists' pockets.
- Tourism consumption: It represents a more inclusive magnitude. Along with tourism expenditure, it also includes services provided by the state or other institutions that are not directly paid for (such as free public beaches or tourist information services subsidized by the state).

The following formulas are used when categorizing inbound, domestic and outbound tourism expenditures according to products (see pp. 63-64 'inbound, domestic, outbound' terms and pp. 65-66 for the table of tourism products) (United Nations, 2008b):

$$\text{Tourism expenditure} = \text{Tourists (overnight vis.)} + \text{Excursionists (Sameday vis.)} (2)$$

In the formula (3), ‘internal tourism expenditure’ represents the total expenditure made by non-resident tourists and excursionists and the total tourism expenditure made by residents within the country.

$$\text{Internal tourism expen.} = \text{Inbound tourism exp.} + \text{Domestic tourism exp.} \quad (3)$$

$$\text{Internal tourism consum.} = \text{Internal tou. exp.} + \text{Other comp. of tour. consum.} \quad (4)$$

Internal tourism consumption’ is the most comprehensive numerical value which represented in (4). It includes subsidies and transfer expenditures given to the tourism industry by the state and other non-state organizations.

Supply-side macroeconomic aggregates that determine the magnitude and direct economic contribution of tourism, including tourism direct gross value added (TDGVA) and tourism direct gross domestic product (TDGDP), aligned with analogous aggregates for the overall economy and other productive economic sectors and functional domains of interest (United Nations et al., 2008b):

$$TDGVA = \text{Tourism Output} - \text{Intermediate Consumption} \quad (5)$$

The result is reached by subtracting the input costs incurred in producing tourism products and services from the production value of total direct tourism output.

$$TDGDP = TDGVA + \text{Indirect taxes (value added tax, sales tax, etc.)} \quad (6)$$

When we look at the formulas, we see that only the value arising from direct tourism production is calculated. Indirect and induced contribution, which we discussed in section 2.3, are not included in the formulas.

2.5.2. Microeconomic Approach

It is important to understand the concept and scope of destination. Destination has a key role in the tourism market. Its specific aspects are not found in the microeconomics and macroeconomics literature.

Destinations are perceived as a combination (an amalgam) of various structures, facilities, and attractions due to the heterogeneity and plurality of the tourism product. The destination product's complexity is undeniable, as all destinations are composed of multiple stakeholders, multiple components, and multiple suppliers, and they convey multiple meanings to multiple markets and market segments to varying degrees. Therefore, each type of tourism destination (such as mountain and beach resorts, historical and art cities, locations that hold festivals or events, amusement parks, or conferences) can be viewed as a functional combination of cultural, economic, and environmental components (Candela & Figini, 2012; Fletcher et al., 2018):

- All destinations are amalgams. This implies that all of their components must be coordinated and possess the same qualitative characteristics. For instance, the luxurious hotel's refined interiors situated in a dilapidated neighborhood of a city are juxtaposed with the surrounding environment.
- Each destination possesses a value. In order to be considered a destination, a location must be perceived as intriguing and worth a visit. Additionally, the notion of destination is intrinsically fluid. In other words, the tourism mixture must be adjusted to the quantitative and qualitative characteristics of the tourist requirements. The existing literature is in agreement that the concept of a tourism destination is the result of a well-defined evolutionary process (the Tourism Area Life-Cycle) that is characterized by several phases.
- Consumption is inseparable linked to all destinations. Tourism is characterized by its consumption in the same location as its production. In other words, the product of the destinations is perishable, unable to be transported or stored, and as a result, the destinations are subject to the pressure of tourism.
- Non-tourists are permitted to access all destinations. Tourists, day trippers, residents, and workers are all simultaneously accommodated by the destination's extant structures and infrastructure. For instance, in coastal resorts, tourism coexists with fishing, navigation, or any other alternative

utilization of sea resources. In the same vein, farmhouse tourism shares numerous characteristics with agricultural activities.

2.4.2.1. Demand-Side Approach

In this section, the concept of tourism demand is considered as strictly referred to a given destination, a given tourism type or any combination of the two. Tourism demand is considered as the relationship between the number of nights spent in a destination and the daily price level of the holiday. The depths of consumer theory, which analyzes the consumer's decision-making process and which goods she will be satisfied with will be explored, briefly.

The tourism demand function can be defined in three ways (Candela & Figini, 2012:76):

- The demand for a type of tourism at the destination,
- The overall demand for a type of tourism,
- The overall demand for a destination.

In synthesis, the tourism phenomenon is consistent with several demand functions. Each refers to a market segment identified by types of tourism and/or destinations.

Dwyer et. al (2020:17) categorizes the elements influencing tourism demand into two groups as price factors and non-price factors. The price variables encompass the transportation service fee, ground content, and currency exchange fees. Non-price factors encompass socioeconomic and demographic variables, such as population, income in the country of origin, education level, availability of leisure time, migration stock, as well as qualitative factors like consumer preferences, tourist attractiveness, destination reputation, quality of tourist services, special events, destination marketing and promotion, cultural connections, and weather conditions. According to Dwyer et al. (2020) the key factors that influence the demand for a good or service are its price (P_x), consumer income (Y), the number of consumers in the market (N), the price of related products (substitutes P_s and complements P_c), consumer tastes (T), level of marketing/promotion expenditure (M), and other variables such as consumer price

expectations and interest rates. The demand for a commodity (Q_s) can be expressed as a generic function, measured in physical units.

$$Q_x = f(P_x, Y, N, P_s, P_c, T, M, \dots) \quad (7)$$

In his inspiring study, Uysal (1998) systematically taxonomizes the determinants of tourism demand and visualizes them under three main headings:



Table 2.7: Determinants of Tourism Demand

Tourism Demand		
Economic determinants	Social-psychological determinants	Exogenous determinants
Disposable income	Demographic factors	Geographical distance between countries
GNP per capita income	Motivations	Historical and environmental assets
Private consumption	Travel preferences	Availability of supply resources
Cost of living	Benefits-sought	Economic growth and stability
Tourism prices	Images of destinations	Political and social environment
Cost of living in relation to destinations	Perceptions of destinations	Recession
Exchange rate differentials	Awareness of opportunities	Technological advancements
Relative prices among competing destinations	Cognitive distance	Accessibility
Promotional expenditures	Attitudes about destinations	Levels of development-infrastructure and superstructure
Marketing effectiveness	Amount of leisure time	Natural disaster
Physical distance	Amount of travel time	Epidemics
	Paid vacations	War, terrorism
	Past experience	Social and cultural attractions
	Life span	Degree of urbanization
	Physical capacity and health	Mega-events
	Cultural similarities	Barriers and obstacles
	Affiliations	Restrictions, rules and laws

Source: (Adapted by Uysal, 1998:87)

Changes in prices result in corresponding variations in the quantity of goods or services that consumers are willing to purchase. But these changes transpire on the demand curve of the tourism industry. Non-price variables have the ability to alter the location of the tourism demand curve. It has the ability to both rotate and move to the left or right. The elasticity of tourism demand is the same as in neo-classical microeconomic theory. The elasticity of each factor affecting demand can be calculated, but here, first of all, several factors are illustrated after the elasticity formula (8) (see Pindyck & Rubinfeld, 2001; Dwyer et al., 2020):

$$\varepsilon = \left| \frac{\% \Delta y}{\% \Delta x} \right| \quad (8)$$

Where y is tourism demand, x represents factors.

- Price elasticity of demand,
- Cross-price elasticity of demand,
- Income elasticity,
- Elasticity related to available money,
- Marketing elasticity.

The striking element here is that the elasticities of income and the amount the tourist allocates for the trip are different from each other. Undoubtedly, a high-income person can make a low-budget travel plan.

After the groups to which tourism demand can belong, its function and factor elasticities are simply defined above, the microeconomics behind tourism demand can now be examined. In other words, we will share the purchasing process based on ‘Consumer Theory’ in order to satisfy the needs of the tourist.

$$T_i = [x_{i1}, x_{i1}, \dots, x_{n1}] \quad (9)$$

So that T_i is composed of a sequence of n tourism goods and services measured on a daily basis. Tourism basket can be found in 3 different structures. Tourism product basket, which includes goods and services, can be in three different algebraic forms due to its structure (Candela & Figini, 2012):

- *Substitutable*, convex and two elements (x_{ih} and x_{ik}) tourism basket is the usual indifference curve. The optimal bundle is formed at the point where the curve intersects the budget line. For example, a tourist who goes to Paris can form a tourism basket with the *Opera Nationale de Paris* and the *Theatre du Chatelet*. The economic problem to be solved is to adjust the budget on the same utility curve according to the change in the prices of the two goods and to ensure that it intersects with the curve.
- *Complementary* utility curve is an L-shaped indifference curve that we know from introductory microeconomics books. It is the situation where two goods in the basket are complementary to each other at a given rate. Accommodation service and breakfast service can be given as examples.
- *Lexiographic order* is the situation where any good A is always preferred over any good B. For example, the indifference curve of a tourist who went to a destination for scuba diving is the one that prefers diving to other touristic goods.

Tourism Individual Utility function is given algebraically as in (10):

$$U = U(x_1, x_2 \dots x_n; N; \dots, N_i, \dots, N_{i,r}, \dots) \quad (10)$$

Every individual x represents a good or service, N total night stays, N_i Number of nights spent in tourism, $N_{i,r}$ represents tourism i and the number of nights spent in destination r .

Candela & Figini (2012:145) emphasize that the tourist has a three-stage selection process. The tourist first decides how much budget he/she allocates for tourism. Then, he/she decides which types of tourism he/she will allocate this budget to. In the third stage, he/she decides which products he/she will consume in which destination. In the entire decision problem formulation, there is a maximizing utility function and a budget constraint function. The algebraic representation of the three-stage tourist selection model is as follows:

$$U = f[u(M_C, N), u^\circ(\dots, N_i, \dots), u'(\dots, N_{i,r}, \dots)] \quad (11)$$

Where M_C denotes the money allocated by the tourist on goods and services other than tourism, N the overall number of days spent on holiday by the tourist. At each stage the tourist solves a utility problem.

So far, the general framework of tourist choice has been discussed. However, in practice, another issue that tourists must decide is whether or not to buy a package tour. The setup of model $U = U(Y, T)$, where Y denotes income, T is binary variable of ‘purchasing tour’ or not; $T = 0$ or 1 . V measures the whole cost of the holiday. V^* is implicit price of package tour.

$$U(Y - V^*, 1) = U(Y, 0)$$

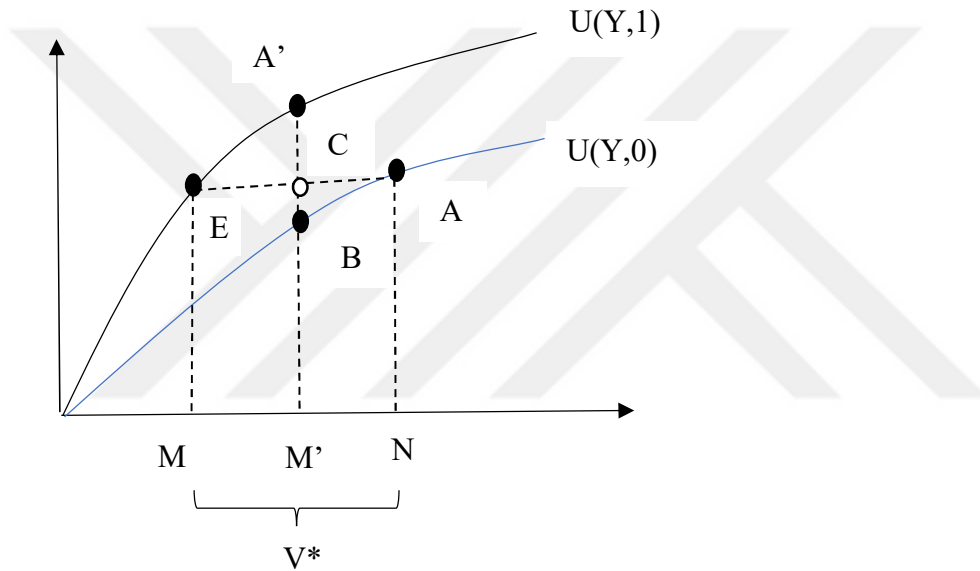


Figure 2.5: The Choice of Purchasing a Package Holiday

Source: (Candela & Figini, 2012:150)

If $V^* \geq V$, the holiday is not purchased and

If $V^* < V$, the holiday is purchased.

The functional form of the utility function and the individual's available income determine the value of V^* . The graphical structure of this decision is illustrated in Figure 2.5 using a standard utility function, $U(Y, 0)$, and its vertical translation, $U(Y, 1)$, which also accounts for the purchase of the holiday. Equation (A) identifies a level

of utility NA with respect to $U(Y, 0)$ in the event that the visitor does not purchase the holiday, with an initial level of income equal to N_0 . A point E and a segment ME are identified by the same level of utility NA translated to $U(Y, 1)$. The segment MN provides the measure of the reservation price V^* , as the traveler is indifferent to being in point A or point E by construction. Consequently, the all-inclusive tour is acquired if the price is less than or equal to MN ; otherwise, it is not acquired. For instance, if the trip's price V is $M'N$, the tourist purchases the package holiday, resulting in an increase in his overall utility from NA to $M'A'$. In terms of utility, Figure 2.5 also enables the identification of the surplus that results from the excursion.

$$A'C = A'B - CB \quad (12)$$

It is where $A'B$ represents the utility that is derived from the tour, and CB represents the disutility of forgoing income and alternative consumption products as a result of purchasing the holiday. Consequently, condition (B) may be alternatively expressed as the tour should be purchased if its price is such that $A'C \geq 0$.

The final generic model for the tourist as a consumer will be developed at this time. This will serve as the model for a tourist who elects to self-organize their vacation, which entails purchasing all of the services that are included in the tourism product and comprise the vacation: transportation, lodging, food services, and any other private or public service that the tourist deems appropriate or necessary. This behavior can be explicated as *Household Production Function* that is popular economic theory which integrates both consumer theory and production theory (Candela & Figini, 2012). We should commence the discourse on the self-organization of the holiday with an equation:

$$N = k(Q)L \quad (13)$$

The model's standard assumption is that the number of overnight stays, N , is a direct function of the time spent on planning, L . Additionally, we wish to consider the possibility that the destination management may have allocated a sum of Q to facilitate the self-organization of the excursion. The following equation illustrates total cost of self-organized holiday.

$$C = vN + wL \quad (14)$$

Where v denotes daily price of holiday, w is the wage of tourist for calculating opportunity cost of holiday. If we plug equation (1) into (2) we obtain:

$$C = [v + \omega(Q)]N = \pi \quad (15)$$

Where $v + \omega = \pi$ is the shadow price of self-organized holiday. A tourist who prepares her own tourist plan must solve the utility maximization problem, where preferences are assumed to be separable (M_C is non-tourism consumption):

$$\max \quad U(M_C, N) = U(M_C) + U(N) \quad (16)$$

$$s. t. \quad M_C + \pi N = Y \quad (17)$$

The first order conditions of the utility function with respect to M_C , N and λ are performed with the Lagrange method. Then equating the λ 's we obtain the (18) equation:

$$\frac{U'(N)}{U'(M_C)} = \pi \quad (18)$$

where marginal utility of the holiday $U'(N)$ is linked with the marginal utility of money $U'(M_C)$ and shadow price of holiday.

The terms $2a/3$ and $a/2$ in the equation here arise when solving the profit maximization problems of 'uncoordinated' and 'coordination provided by an external authority' firms that maximize profit in tourism destinations. It is assumed that there are only hotels and restaurants in the mentioned markets. The total cost of lodging and meals for a tourist who purchases them separately is $2a/3$, which is higher than the price of a joint supply of the two items, which is $a/2$. Nevertheless, the condition against self-organization of a market good is:

$$\frac{2a}{3} \geq \left(\frac{a}{2}\right) (1 + m) \quad (19)$$

if we designate the markup received by the firm responsible for the sale and distribution of the package tour with m . The equation implies $m \leq 1/3$. The choice

between producing or purchasing a holiday depends on the following conditions (Candela & Figini, 2012:154):

- If $\pi < v_H(1 + m)$, then the tourist should self-produce the holiday;
- If $\pi > v_H(1 + m)$, then the tourist should purchase the holiday;
- If $\pi = v_H(1 + m)$, then the tourist is indifferent between the two alternatives.

It is crucial to emphasize that the value of π is typically distinct for each individual; in fact, it is contingent upon the opportunity cost w and the individual's productivity as evidenced by their own production function.

Solving the problem of investing in a destination that a tourist visits is a separate subheading within the consume theory. However, the details will not be discussed here.

2.4.2.2. Supply-Side Approach

The supply-side tourism production theory also has algebraic differences from other industrial production theories. However, since production and supply are not included in the dissertation content, a top-down view will be made.

Tourism is frequently perceived and designated as an 'industry'. An industry refers to a collection of enterprises that are involved in producing the same type of output. Industries are typically categorized based on the specific items and services they generate. Nevertheless, the consumption of visitors is not limited to a specific range of goods and services that are produced by a predetermined group of sectors. As tourists buy products and services from companies in all sectors of the economy, all industries to some extent contribute to the supply of tourism. Therefore, we observe (Dwyer et al., 2020:51):

Providing a product or service to a tourist constitutes a tourism-related activity, whereas providing the identical product or service to a non-tourist does not. Whether the production is considered part of the tourism supply is determined by the characteristics of the customer. The products produced by tourism enterprises can be classified as either tangible things (such as retail items) or intangible services (such as

tour guiding). In most cases, tourism experiences involve a combination of both, as they often involve the consumption of a tangible product and an intangible service. Contemplate a dining experience at a restaurant that seamlessly integrates the culinary offerings with the quality of service provided. The majority of tourist operators and destinations primarily offer services rather than products, as the latter are typically perceived. Contrary to commodities that can be inspected and examined before being purchased or consumed, tourism services typically fall into either the category of experience or credence (Dwyer et al., 2020):

- Experience goods refer to products that can only be accurately appraised after they have been purchased and experienced. Several personal services, such as restaurants, beauty salons, theme parks, travel agencies, and holiday providers, might be included under this category.
- Credence goods refer to products or services that are challenging to assess, even after they have been consumed. This difficulty arises either because consumers lack the necessary knowledge or technical skills to make an accurate evaluation, or because the cost of obtaining information outweighs its value. Several professional services belong to this area, such as travel insurance, aircraft safety, and destination health risks.

Tourism supply pertains to the capacity and tendency firms have to offer different amounts of a tourism product at different rates within a certain timeframe. Just like tourism demand, tourism supply is affected by both price and non-price factors. The supply function of a tourism product (Q_s), which is measured in physical units, can be defined as an equation (Dwyer et. al 2020):

$$Q_s = f(P_x, P_0, P_e, C, T, N, \pi, \dots) \quad (20)$$

Where P_x is the price of the product, P_0 is the price of other products, P_e is expected prices, C is the cost of inputs, T is the level of technology, N is the number of suppliers, π is the expected profit.

Following table shows the characteristics of the industry:

Table 2.8: Special Features of Tourism Products and Services

Services are intangible. Potential buyers are unable to experience, perceive, detect, handle, or sample a service prior to agreeing to acquire it. Measuring the output of services and the cost per unit is much more challenging than measuring these aspects for regular products.

Tourism experiences. Goods lack personalization, while services involve personal interaction. Products have tangible attributes that can be assessed prior to purchase. In contrast, tourist products are considered as 'experience' or 'credence' products rather than 'inspection' items because their quality cannot be determined beforehand.

Risk. The accurate determination of the type and quality of the tourism product is not possible in advance, which creates uncertainty and risk for purchasers in the tourism industry. In order to minimize ambiguity, purchasers seek indications of service excellence, such as reputation, product evaluations, guidebooks, ratings agencies, and similar sources of information.

Irreversibility. Once a service has been utilized, it is not possible to return or refund it. Unlike manufactured goods, which can be returned to the supplier or recalled by the manufacturer, tourism services such as tours, plane travel, and massages cannot be returned once they have been utilized.

Inseparability. Tourism services are provided and consumed concurrently, with customers bringing their own personal experience to the supply. Most services are provided by people. Services are non-existent until they are acquired through a purchase. Typically, when acquiring a service, one interacts with a service provider.

Services have a limited lifespan. Contrary to the majority of manufactured goods, a significant portion of tourism supply cannot be preserved for future sale. A hotel room or airline seat that has not been sold remains unsold indefinitely (at that specific time and location). For the firm, this means a permanent loss of revenue.

Source: (Dwyer et al., 2020:53)

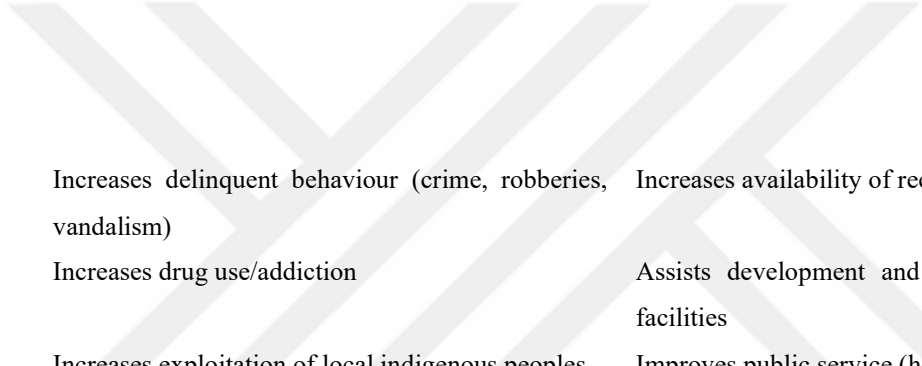
2.5.3. Impacts of Tourism

Since the tourism industry depends on the integration of different ethnicities, cultures and social groups, it undoubtedly has economic, social, cultural and environmental impacts. The impacts of the industry are classified in the Table 2.9.



Table 2.9: Positive/Negative Impacts of Tourism

Domains		
Social Impacts	Economic Impacts & Opportunities	Natural Environmental Impacts
Affects community attachment	Affects cost and standard of living	Affects the natural environment (seas, lakes, caves, beaches etc.)
Affects cultural identity, traditions, regional character	Increases local business profit	Affects wildlife (mammals, floras, birds, fish etc.)
Affects interaction and feelings about tourists	Foreign exchange inflow/outflow	Affects natural resources (water, climate, air)
Affects morality, honesty, trust, politeness	Can lead to wasteful public spending	Affects the farmed environment (agricultural landscapes, man-made forests, fish farms)
Affects the rights of residents	Enhances employment opportunities	Affects the build environment (villages, townscapes, infrastructures etc.)
Can create social inequity	Enhances investment and development opportunities	Affects conservation, appreciation of natural areas
Disrupts the life of local residents (congestion, traffic)	Stimulates the local and regional economy	Changes a local area's appearance
Encourages public participation	Increases potential for new local business	Increases litter
Enhances pride in the area	Increases price of goods and services, household income	Increases noise pollution
Increases alcoholism	Affects land/housing affordability (property costs, rent)	



Increases delinquent behaviour (crime, robberies, vandalism)	Increases availability of recreational facilities
Increases drug use/addiction	Assists development and maintenance of public facilities
Increases exploitation of local indigenous peoples	Improves public service (health, fire, police protection)
Increases prostitution and sexual permissiveness	Creates new opportunities for shopping, dining patterns
Increases smuggling	Enhances destination promotion
Leads to cultural exchanges	
Leads to demographic changes	
Leads to interaction with friends, relatives, neighbors	
Leads to visitor saturation and overcrowding	
Stimulates in-migration	
Creates new cultural activities and attractions	

Source: Author's own illustration (based on Tovar & Lockwood, 2008; Swarbrooke, 1998)

2.4.3.1. Economic Impacts of Tourism

As can be seen in the table, the tourism industry is directly related to many outputs such as living standards, purchasing power, labor market, international currency reserves, public services/expenditures, and regional economy. Since, there is a vast literature including tourism, it can be difficult to pinpoint the seminal studies of area for a newcomer. Therefore, Comerio & Strozzi (2019) apply dynamic literature review method called ‘Systematic Literature Network Analysis’ to extract the backbones of research area. This method is a combine of systematic literature review and bibliographic network analysis. This study helped us to search the literature systematically and rapidly about economic impacts of tourism. Many of the citations below have been made from this work.

When it comes to economic impact, the first metric that comes to mind is ‘growth’. That is why the first stage focuses on the impact of tourism on economic growth.

Marin (1992) indicates tourism as a booster of economic growth as a whole, with its positive impacts. Firstly, Ghali (1976) and Lanza & Pigliaru (2000) emphasize tourism-economic growth relation with an empirical approach. Then, Balaguer & Cantavella-Jorda (2002) tested the ‘tourism-led growth hypothesis’ (TLGH) and ‘economic-led tourism hypothesis’ (ELTH). After that study, these hypotheses have become predominant topics in tourism study area. In the other seminal study of Pablo-Romero & Molina (2013) performed chronological analysis of the empirical research by categorizing papers according to econometric methodology applied as time series, panel data and cross-sectional. The results of the study to a large extent approves the relationship of tourism and economic growth. The sample size is 87 papers, 55 of them found a uni-vocal relationship, 16 identified a bi-univocal relationship and 9 indicated that the connection goes from economic growth to tourism and only 4 did not find any kind of linkage.

There are studies in the literature that explain conflicting results. Khan et al. (1995) show the contribution of tourism to Singapore’s economy via the three

multiplier effects aforementioned and its raise over time. Lim & McAleer (2000) dwell on seasonal pattern of the tourists coming Australia. Payne & Mervar (2002) have changed the sample with comer tourists to Croatia, in addition, they shed light on political instability's negative effect on tourism revenues. Balaguer & Cantavella-Jorda's (2002) paper has urged 'TLGH' concept to be most attractive topics in the literature. More in detail, applying integration and causality tests, link between international tourism and economic expanding on the level of Spain market. After that study, a body of researchers have demonstrated the existence of that kind of connection in various countries. Especially, Dritsakis (2004) investigates a strong Granger causal relationship between international tourism revenue and economic growth.

Brida and Risso (2009) claims there is a causal relationship from tourism and real exchange to economic growth in Chile. Differently, Kim et al. (2006) and Belloumi (2010) points a bidirectional causal relationship in Taiwan and Tunisia, respectively.

Zhang (2012) investigates the impact of tourism on economic growth. He constructs an economic growth model for a small open country that incorporates tourism within a perfectly competitive economic framework. The economy has a single service sector and a single industrial sector. Both international tourists and domestic citizens consume goods and services that are not traded internationally. The land is allocated for both residential purposes and the provision of services. In this context, the production aspect remains consistent with the neoclassical growth theory, but he employs a different utility function to ascertain the household's behavior. The system possesses a singular stable equilibrium point. He conducts a simulation of the national economy to analyze the impact of several factors such as interest rate fluctuations, price elasticity of tourism, global economic conditions, productivity levels in the industrial and service sectors, and the willingness to save. The comparative dynamic analysis yields significant insights. Increasing the price elasticity of tourism leads to a decrease in tourist demand and the price of services. This results in a deterioration of the national trade balance and a reduction in the output of the service sector. On the other hand, the output of the industrial sector increases

and some of the labor force shifts from the service sector to the industrial sector. Additionally, the lot size decreases and the land input of the service sector is reduced. In the short term, this leads to an initial rise in GDP, consumption levels of goods and services, and wealth level. However, in the long term, these indicators eventually fall (Zhang, 2012).

In their seminal work, Hazari & Sgro (1995) use a dynamic trade model when analyzing the relationship between tourism and growth. In their studies, they state that most of the tourists' expenditures are on non-traded goods and services in the host country. Contrary to commodities and services that are not sold and produced by residents, these expenses result in the acquisition of foreign currency. Therefore, commodities and services that are not traded domestically are transformed into exports. Nevertheless, this export of goods and services related to tourism differs significantly from conventional exports in that the pricing of these non-tradable products is determined inside the local market rather than the worldwide market. Theoretical analysis reveals that the expansion of tourism exerts a significant influence on the sustained economic growth. This favorable impact is generated by tourism acting as a time saving device which allows the domestic population to consume now rather than later. The expansion of tourism infrastructure leads to an influx of foreign cash, hence diminishing governments' inclination to attract capital at high interest rates. Nevertheless, the study lacks practical implementation. Furthermore, per capita consumption is utilized as a proxy for measuring welfare. No environmental variable or parameter is regarded as external. The model lacks consideration of the inherent influence of the environment on tourism demand and the detrimental effects of tourism on the ecosystem.

In their study, Lanza et al. (2003) discuss the long-term effects of specialization in tourism on economic growth. Recent economic policy has prioritized the promotion of tourism as a strategy to address unemployment. Nevertheless, the long-term economic growth implications of raising specialization in tourist activities have received limited attention. Comprehending this procedure is crucial because the capacity for enhancing productivity is lower in the tourism industry compared to

manufacturing. This study has examined this potential by employing the endogenous growth model for a small open economy proposed by Lucas (1988). This implies that even if the possibility for increasing productivity in tourist activities is lower compared to other industries, economies that focus on tourism may still experience an increase in real incomes due to a favorable change in the terms of trade. The impact of specializing in tourism on actual income growth is contingent upon the empirical inquiry into the extent of the elasticity of substitution between tourism and other commodities. The evidences indicate that the impact of terms of trade may be significant and should be taken into account when assessing the long-term growth prospects of regions that focus on tourism (Lanza et al., 2003).

Tourism in Mexico has achieved success in terms of stimulating foreign currency inflows, generating employment opportunities, and dispersing migration patterns. Since the initiation of tourism growth in the 1970s, Mexico's reliance on the United States, which is the main source of tourists to Mexico, and international financing institutions has grown. The impact on individuals employed in low-paying and temporary positions should not be ignored, and their separation from those who have access to tourism amenities should be emphasized. Due to the implementation of structural adjustment programs and recurring economic crises, many individuals have been compelled to take up low-paying positions in the tourist sector as they strive to secure their survival. For individuals employed in low-paying positions within the industry, who are essentially taken advantage of by both international and domestic tourism investors, the resolution, if not through the formation of labor unions, may need to be sought beyond the current capitalist system (Wilson, 2008). In addition, many other studies argue that the industry has widened the wealth gap between employers and employees, and that the reason for the relative cheapness of Mexico's tourism industry is the low earnings of employees (see Fernández-Kelly & Patricia, 1983). However, there are also studies that emphasize that the drudgery and work-related accidents of working in the manufacturing sector are higher than in tourism (see Pena, 1997).

The occurrence of a financial crisis typically has significant adverse consequences for Singapore's tourism industry. On a macro level, nearly all factors see a negative impact, although exporters considerably benefit. At the industry level, a negative tourism shock has a significant impact on both the core tourism-related industries and sectors that have a strong connection to the tourism industry. Although businesses that are loosely connected to tourism see minor negative impacts, the sectors that compete with tourist are growing. In the commodity markets, there is a general decline in prices and outputs for most products, but there is an increase in real home consumption and exports for those products. When evaluating three possible policy responses to a negative tourist shock, the simulation results indicate that a slight reduction in the goods and services tax reduction has a significantly greater beneficial impact on Singapore's economy compared to a tourism subsidy policy. This finding contradicts the conclusions of prior studies. Nevertheless, if the government intends to implement a subsidy program, it is recommended to adopt a tourism-focused subsidy policy, as it proves to be significantly more efficient than a broad-based industrial subsidy policy, benefiting both the tourism sector and the whole economy (Meng, 2014).

In his study Inchausti-Sintes (2015) investigating the impact of tourism on growth and employment in Spain using input-output and computable general equilibrium models. The categorization of the input-output table (IOT) into tourist and non-tourism sectors, along with the recursive-dynamic Computable General Equilibrium (CGE) model, offer a comprehensive understanding of the impact of tourism on the Spanish economy. Furthermore, the recursive-dynamic Computable General Equilibrium (CGE) model enables the analysis of interconnections among sectors and their long-term impact on economic growth. The relationship between tourism and economic growth in this dynamic world is intricate and uncertain, requiring careful consideration before drawing any conclusions. For example, the emergence of the internet and new technology has transformed certain things that were previously not able to be traded into goods that can now be traded, such as accounting services. Nations such as India are already capitalizing on this emerging circumstance.

The frequent and unforeseen alterations will compel us to reevaluate numerous hypotheses and previously established conclusions in the subject. Considering the aforementioned factors and relying on the assumptions and forecasts outlined in this article, it asserts that tourism contributes to economic expansion, decreases the unemployment rate, enhances the terms of trade, and stimulates domestic demand in Spain in the medium run. The impact on various macroeconomic variables varies in magnitude. For heavily indebted nations such as Spain, a reduction in the current account deficit is particularly advantageous in the short and medium term. The impact on real gross value added is also favorable and noteworthy. While the impact on unemployment may not be a definitive answer, it does provide some alleviation. Tourism has a dual impact on domestic demand. On one side, the non-tourism sector experiences a growth in domestic demand as a result of the rising demand for jobs. Conversely, the tourism sector experiences a decrease in domestic demand as a result of the increase in domestic prices caused by tourism.

McKinnon (1964) asserts that foreign exchange earnings of tourism can be canalized to import capital and then to produce goods and services. Oh (2005) points out tourism increases balance of payment.

However, there are also some studies that claim the negative effect of tourism. Copeland (1991) stresses boom of tourism may drive other sectors to deindustrialize called 'Dutch Disease Effect'. Song et al. (2012) points out there is no evident of deindustrialization process in the long run with tourism boom, but it still might be valid in the short and medium run. Moreover, Capo et al. (2007) and Holzner (2005) come up with another negative impacts of massive tourism arrivals such as over-exploitation of natural resources.

There are some main methodologies has been applied in the study area. Fletcher (1989), Briassoulis (1991) and Johnson and Moore (1993) point the benefits of the input-output analysis in the investigation of the economic effect of tourism. This methodology commonly applied during that period. However, the constraints are shown such as seasonality problems, intangible social and environmental impacts or

more generic methodological issues not limited to tourism field in these studies. After that, Zhou et al. (1997) overcomes these problems mostly by using ‘Computable General Equilibrium’. This advancement is a solid turning point of the stream of the tourism literature since beginning from now the majority of the researchers adopted this new technique. Dwyer et al. (2000) tested the validity of CGE modelling to tourism growth in both nations and regions, praising the efficiency of this new methodology to take into account also economy-wide effects, such as the reduction of the demand for exports and import industries due to the competition with an expanding tourism industry.

There has been a substantial economic recession in Spain since 2008. The economy is perceived as having the potential to be revitalized by tourism, which is perceived as a potential substitute for weakened domestic demand. However, tourism also has significant implications for the economy at the microeconomic level, including the allocation of resources, the appreciation of exchange rates, and the demand for non-tradable products. These factors have the potential to precipitate the so-called Dutch Disease. In order to evaluate this potential, a recursive-dynamic CGE model is implemented. Tourism is expected to stimulate the economy; however, the Dutch Disease operates at the sectoral level, resulting in a shift in resources toward non-tradable sectors. This shift may jeopardize productivity gains, generate a persistent appreciation of the real exchange rate, and, as a result, impact long-term economic growth (Inchausti-Sintes, 2015).

Njooya & Seetaram (2017) suggest that Kenya, as a country, will have advantageous outcomes from the increased rise in its Gross Domestic Product (GDP) and earnings from exports. Nevertheless, the increased expansion will be accompanied by expenses. The phenomenon known as Dutch Disease will cause a decline in the competitiveness of other exportable sectors and an increase in the value of the currency, resulting in cheaper imports and a deterioration of the country’s trade balance. Resources are being shifted from traditional sectors to the tourism industry and its associated supply chain. These industries see growth, resulting in the creation of job opportunities and the provision of greater salaries. The agricultural sector is

experiencing a drop, while non-tourism exporters are expected to have poor to negative growth.

The development and increase in tourism and the subsequent economic growth primarily benefits both the urban and rural poor by increasing their income and creating more job opportunities. This results in a decrease in the number of people living in poverty and an even larger decrease in the extent and intensity of poverty. Tourism in Kenya has the capacity to alleviate poverty at both the national and local levels, including urban and rural areas. Nevertheless, poverty declines at a more rapid rate in urban areas, while in rural areas, the impact is mitigated by a decrease in the demand for labor and the income of impoverished individuals employed in the agricultural industry (Njooya & Seetaram, 2017).

While the economic effects of tourism are being investigated, its relationship with regional development is finally analyzed. Calero & Turner (2020) shed light the literature containing theoretical models of regional economics and economic geography related to tourism. It also emphasizes the role of tourism in regional development and growth with empirical applications. Studies show that tourism in the early stages of regional development does not participate in modeling and policy recommendations. Because for a long time, social scientists and policy makers thought that tourism did not have a meaningful importance in the economic development process. At the same time, geoscience researchers tended to put the manufacturing industry ahead of the service industry. The fact that tourism is not accepted as a research area on its own has made it necessary for the industry to develop its own scientific agenda on issues such as “destination competitiveness, tourism promotion”.

When the literature is searched, it is seen that the majority of the studies involving tourism systems are at the national and global level. In other words, it is seen that the effect of tourism on macro-centered development is more concentrated. There are great differences and divergences in the methodologies of these studies. On the other hand, there are very few studies examining tourism systems at micro and regional level After the economies of many countries in the Asia-Pacific region were seen to

be eradicated with the tourism industry, the field of tourism has become a more attractive area for scientists and policy makers. Because, the global and regional developments experienced in recent years accelerate the Asia Pacific region to become the prime tourism region. Literature review detects that in spite of tourism has an igniter function for regional development, solid theoretical methods that explain the linkages of tourism and regional development is hard to find out. Although, most of studies refer to regional development models and consumer choice theories, still there exists a gap between theoretical and empirical modelling of tourism-regional development (Calero & Turner, 2020).

2.4.3.2. Social Impacts of Tourism

Social effects of tourism are divided into three distinct groups. These are referred to as individual, familial, and society impacts. An individual who engages in travel, especially to a new destination, encounters an environment that is not only geographically unknown, but also personally, socially, and culturally unfamiliar. Consequently, the visitor encounters challenges that require resolution in order to ensure a completely pleasurable and fulfilling journey. Travelers must effectively allocate their financial and temporal resources in circumstances that are significantly distinct from those encountered in their usual environment. In addition, individuals must effectively oversee their social contacts and relationships in order to acquire nutrition, shelter, and other essential requirements, and maybe to establish friendship. Assessing the magnitude of the cultural gap, individuals may consider the level of unfamiliarity they desire in their surroundings when making decisions about how far they want to be from their home base. Individuals who engage in travel vary in the extent to which they interact with the unfamiliar cultures they encounter. Life — such as tourism, is a systematic approach for individuals who desire a more profound engagement with the local culture to obtain such enhancement. Certain tourists have a preference for a more discerning and curated interaction, which can be facilitated by engaging the services of a tour organization. Examples of tours include those that are specifically organized to explore cultural issues and experiences, such as an anthropological study tour or participation in an arts and crafts fair. Irrespective of the

extent of local involvement, the individual traveler must, at the at least, conduct a superficial examination of the country to be visited and make a decision on how to address the challenges posed by environmental disparities. Prior planning is a prudent strategy. Travel experiences have a significant impact on both the individual traveler and society at large, as they typically form some of the most remarkable memories in the traveler's life (Goeldner & Ritchie, 2009).

As a family expands and the children develop, the family trips become the most memorable events of each year. The thrill of preparation, the eager anticipation, and the actual experience of traveling are unforgettable moments in family life. Journeys that include a certain level of excitement are likely to be the most unforgettable. Family travel might also provide educational opportunities (Goeldner & Ritchie, 2009).

The greater the goal and instructional value of a trip, the more advantageous It is. Prior to embarking on a journey, it is advisable to engage in thorough study and seek professional travel advice, as these actions considerably enhance the overall benefits of the trip (Goeldner & Ritchie, 2009).

According to the results of the survey applied to the participants, respondents held a range of conflicting perceptions at both the individual and community levels. The impact of the community, whether favorable or negative, has a greater influence on personal quality of life than the impact of tourism. The majority of those residing in northwest Tasmania view tourism as an industry that provides significant advantages to the community, such as economic growth, job opportunities, and improved personal lifestyle and leisure options. The negative consequences encompassed a decrease in the affordability of housing, an increase in litter, and the redirection of public funds away from non-tourism services. Although the benefits of tourism obviously surpass the drawbacks, it is important for tourism and regional development authorities to carefully monitor the equilibrium between these interests in the future. They should also have contingency plans in place to deal with any potential decline in the current situation. Residents' attitudes were significantly influenced by their involvement in the tourism business, level of education, age, and

place of living. An examination of these impacts reveals rising concerns regarding the allocation of tourist advantages and disadvantages, specifically in terms of access to employment and lifestyle prospects. In order to achieve a viable regional sector, it is necessary to address distributional difficulties in future tourism development programs (Tovar & Lockwood, 2008).

Approximately half of the tourism benefits found for the region were directly linked to protected areas. The social significance of park tourism is often underestimated due to insufficient information. However, research like this can be utilized to strengthen economic and environmental justifications for protected area networks.

Travel exerts a substantial impact on the national comprehension and admiration of other individuals. Government programs in progressive and enlightened nations promote travel, especially within the country, to familiarize individuals with different regions and foster a sense of respect for their own country. The presence of tourists in a country has an impact on the way indigenous peoples live. The behavior and interpersonal connections of visitors can significantly impact the lifestyle and attitudes of local residents in the host country. The most prominent impacts of this phenomena are observed when individuals from North America or Western Europe visit a developing nation with a primitive culture or a culture marked by a poor economic status and an unsophisticated populace. The visitor is impacted by the cultural disparity. Typically, this leads to a heightened recognition of the positive aspects of life in the visited country that may be lacking in one's own society. An advantageous circumstance arises when individuals visiting or residing in the host nation interact socially and develop a deeper familiarity with one another. This significantly enhances the understanding of each other's character and attributes, fostering appreciation and respect in both groups (Goeldner & Ritchie, 2009).

Mason (2008) asserts that the significant socio-cultural impacts of tourism are substantial. Tourism has several positive effects on society, such as generating employment opportunities, rejuvenating underdeveloped areas, reviving local arts and

crafts and traditional cultural practices, revitalizing social and cultural life of the local community, preserving local architectural traditions, and promoting the conservation of aesthetically and culturally valuable areas of natural beauty. Tourism, especially in developing nations, can promote increased social mobility by shifting employment opportunities from traditional agriculture to service industries, leading to higher earnings and improved career prospects. Nevertheless, tourism is widely known for its significant adverse impacts on the society and culture of the areas it visits. Tourism can lead to over occupancy in resorts, resulting in stress for both tourists and local inhabitants. In areas where tourism becomes a dominant industry, traditional occupations like farming may experience a decrease in importance. In certain circumstances, certain regions may develop an excessive reliance on tourism. Residents may encounter challenges in coexisting with tourists who possess divergent ideals and engage in recreational pursuits, while the residents are occupied with work. This issue is exacerbated in areas where tourism is a seasonal endeavor, requiring inhabitants to adapt their lifestyle for a portion of the year. In nations where strict religious principles are upheld, the introduction of a large number of tourists may be seen as undesirable due to the resulting changes in social values.

Demonstration effect is one of the socio-cultural effects of tourism. It occurs when there are visible characteristic differences between communities of visitors and visiting countries. Developing countries visited try to imitate the lifestyles and consumption habits of visitors from developed countries. However, because their welfare status is not enough, they accumulate anger. Especially young people of the host country are more affected by the consumption habits of visitors. This may cause the differences between the elderly and young generations in society to become more visible (Williams, 1998; Burns & Holden, 1995). The demonstration effect is particularly likely to occur in situations where the interactions between residents and visitors are relatively shallow and brief. Acculturation is a process that can take place when there is prolonged and more intense interaction. Acculturation theory posits that when two cultures interact over a period of time, there will be a sharing of ideas and

goods, resulting in different degrees of cultural convergence, or similarity (Williams, 1998).

Examples of tours include those that are specifically organized to explore cultural issues and experiences, such as an anthropological study tour or participation in an arts and crafts fair. Irrespective of the extent of local involvement, the individual traveler must, at the at least, conduct a superficial examination of the country to be visited and make a decision on how to address the challenges posed by environmental disparities. Prior planning is a prudent strategy. Travel experiences have a significant impact on both the individual traveler and society at large, as they typically form some of the most remarkable memories in the traveler's life (Tovar & Lockwood, 2008).

2.4.3.3. Environmental Impacts of Tourism

When it comes to the natural environment, one of the first metrics that comes to mind is its relationship with CO₂ and other greenhouse gas emissions, which brings different ideas. Considering the carbon footprint created by air, sea and land motor vehicles needed for the transportation of tourists, and the fossil fuels used to produce the energy needed due to the tourist flow to the destination, it is inevitable that the relationship between tourism and carbon and greenhouse gas emissions will be positive in the short term. Lenzen et al. (2018) suggest that tourism increased global greenhouse gas emissions by 8% between 2009 and 2013. However, Zhao et al. (2024) suggest that the tourism industry has a positive effect on CO₂ emission efficiency. They state that this is achieved in the form of tourism development-environmental regulation-industrial structure. The tightening of environmental regulation is intended to ensure that local governments supervise tourism enterprises and increase environmental standards. However, they recommend prioritizing environmentally friendly projects in order to prevent CO₂ emissions created by foreign direct investments.

Before sports organizations such as the Olympics, the World Football Cup, e.g, countries which host the organization, must get ready for the tournament as capacity. Since, there are lots of visitors and athletes for the organization. Therefore,

governments' increase their infrastructure investments before organization start. Li et al. (2011) forecasted the economic impacts of tourism generated by the 2008 Beijing Olympics, including both ex-ante and ex-post estimations. Sun and Pratt (2014), Hadjikakou et al. (2015) and Sun (2016) analyzed tourism's environmental consequences through 'environmentally extended input-output' model, CGE model and tourism satellite account (TSA), respectively.

Gössling and Peeters (2015) explain the concept of resource use intensity for tourism in their study, emphasizing the carbon emissions created by tourism and the wastefulness it creates in water, food and land use. In 2010, the worldwide tourist sector may necessitate around 16,700 PJ of energy, 138 km³ of freshwater, 62,000 km² of land, and 39.4 Mt of food, while also generating emissions of 1.12 Gt CO₂. Notwithstanding attempts to adopt more sustainable tourist practices, data suggests that the overall resource consumption of tourism may increase by 92% for water and 189% for land use between 2010 and 2050. Maintaining the global tourist system necessitates rapidly expanding resource inputs, while the system concurrently becomes more susceptible to disturbances in resource flows.

Cevik (2022) in its study on Caribbean countries, offer insightful information to decision-makers dealing with intricate environmental issues that cut across national borders. Policy priorities must promote sustainable and inclusive economic development, financial resilience, and environmental quality in order to maximize welfare-enhancing economic growth. As a result, in order to manage tourism responsibly, it is necessary to lessen its adverse effects on the environment and to reduce the region's over-reliance on energy derived from fossil fuels, which is the primary source of CO₂ emissions. In order to achieve this, nations could: (i) provide incentives for decarbonization across the board; (ii) create a low-carbon energy sector; (iii) electrify mobility and transportation; (iv) improve land-use practices and smarter urbanization through stricter building codes; and (v) decarbonize the tourism sector. However, these actions would not be the only ones. Restoring natural capital can help nations become more robust to extreme weather events and gradual changes like sea level rise and desertification. This is especially true for forests and coastal ecosystems.

In order to transition to a low-carbon economy, wiser urbanization is thus needed, particularly in tourist-dependent areas. These strategies include expanding green spaces, strengthening CO₂ emission management in new projects, improving building energy efficiency, and reducing vulnerability to climate change. In order to do this, governments can impose levies and feebates to encourage energy conservation in the stock of residential and commercial buildings and lessen deforestation in the land-use and forestry sectors.

In order for the mass tourism industry to continue its existence, large accommodation facilities or cruise ships are needed. The locations of accommodation facilities should be carefully selected and should be constructed away from protected areas in order not to have a negative impact on natural life and biodiversity. In addition, lands needed for agriculture and animal husbandry should be avoided in the construction of tourism facilities, otherwise it is inevitable that there will be changes in the dietary patterns and food prices of the residents. Also, Sunlu (2003) emphasizes significant land resources encompass minerals, fossil fuels, arable soil, forests, wetlands, and animals. The heightened development of tourism and leisure services has intensified demand on natural resources and scenic settings. The establishment of tourist facilities can directly affect both renewable and non-renewable natural resources through land utilization for accommodation and infrastructure, as well as the consumption of building materials.

In historical areas, tourism demand encourages the preservation of old buildings and monumental architecture. However, in this process, commercial modernizations can be carried out in some areas, which can lead to the loss of original architecture. In popular tourist areas, locals can be replaced by businesses that cater to high-income tourists. This can change the urban fabric. However, in a well-regulated market, positive results such as making transportation more efficient and increasing safety and hygiene in the destination can also be seen.

There are decisions and policies that countries have taken to absorb negative natural environmental effects. The Spanish government has limited the number of

tourists in order to protect the environmental assets of the Balearic Islands, which have excessive tourist demand. Similarly, Croatia is monitoring the number of visitors with the smart tourism technology of Dubrovnik. Australia is implementing strict inspections on operator companies that provide sea tours in order to protect coral reefs. While Greece is very meticulous about waste management, Türkiye is implementing environmental management plans in regions exposed to mass tourism, such as Antalya.

2.5.4. Tourism and Regional Development

The literature propounds conceptual models applying descriptive research method, predominantly. Thus, these conceptual models do not provide empirical relationship of economic factors and tourism activities. It is difficult to see testable propositions which can be empirically approved. This theoretical gap is a consequence of the special nature of the tourism product where consumers (external visitors) must travel from a country or region to consume non-traded goods and services, converting these goods and services into tradable goods and services (Hazari and Sgro, 2004). As Luzzi and Flückiger (2003: 240) “Tourism is not really an industry, but rather a collection of activities – which are also available for consumption by residents – in which foreigners partake. Tourism is thus a bundle of goods and services that can be viewed for analytical purposes as a single complex and differentiated product. It is complex because it includes a wide variety of goods and services, and differentiated because each destination has unique features”.

There are some studies in the literature that try to theorize the relationship between tourism and regional development. Zhang (2017) proposes a multi-regional growth model that includes tourist interaction. It showcases the dynamic interactions between economic growth, structural economic change, interregional trade and tourist inflow. What makes the study different is that the Solow growth model, in which tourism is taken as an endogenous variable, is applied across regions. Not only the Solow growth model, but also the Uzawa two-sector model is applied in the multi-regional economy, within the framework of general equilibrium. Also, Ma et al. (2018) apply the fuzzy evaluation method to evaluate a holistic approach being used for

developing the area of Qionghai City in the province of Hainan. This study can be considered the first attempt to evaluate the effects of tourism on regional development. Although both studies attempt to fill the theoretical gap in the literature; studies have not applied any empirical test to prove the correctness of their assumptions and they have been insufficient. There are inconsistencies and imbalances between the theoretical and empirical methods applied in explaining the tourism industry and issues related to regional development.

Blake et al. (2008) indicates that tourism might reduce poverty through several linkages. Croes & Vanegas (2008) claims tourism-led development shows a good performance for reducing poverty, however, many countries' governments do not take serious tourism as a locomotive sector for growth and development. Sugiyarto et al. (2003) focused on the globalization and Indonesia economy, and finalized as globalization-Indonesia economy implies positive relationship.

In another study, Williams (2016) examines tourism-based regional development in a coastal town. This article examines the effects of planned development projects in Emu Park, a coastal town in Queensland, Australia, on the regional economy. The input-output (IO) analysis is utilized to evaluate the economic advantages for the region. Input-output analysis (IO) is a commonly employed method for comprehending the economic structure, assessing the impacts of alterations in specific industries and/or final demand, and conducting important industry analyses. Input-output analysis is a methodical approach employed to ascertain the interconnections between various industries in the economy and the consequential impact of changes in one industry on the overall economy. These models are utilized to calculate the ripple effects of alterations in revenue, value added, spending, and employment. Within the economy, every industry functions as both a seller, offering its products to other industries, and a purchaser, acquiring the products of other industries. The value contributed comprises employee compensation, gross operating surplus, mixed income, and net taxes. Final demand consists of the combined total of households and government final consumption spending, gross fixed capital creation, changes in inventories, and exports.

There is a sprawling literature that emphasizes the effect of international tourism activities on national accounts. For instance, Chesney and Hazari (2003) and Nowak et al. (2004) analyze tourism-residential welfare interaction. Hazari and Nowak (2003) applied two-country model to simulate specific nature of the offer curve and trade equilibrium. The model shows that there needs an optimal tariff to obstruct impoverish the home country. In the study, an extension of Harris-Todaro model is used to examine the impacts of tourism on regional incomes, regional welfare and regional unemployment in rural and urban areas. In conclusion, the authors find out that a tourism boom in the urban region leads to impoverish urban region. This study is a rare one which includes tourism at the regional level with a partly theoretic framework (Calero & Turner, 2020).

Vu & Turner (2006) focused on the role of tourism in regional development and whether is there tourism led balanced or unbalanced growth. In addition, Zhou-Grundy & Turner (2014) shed light policies for reducing regional disparity and creating more employment.

As per Calero & Turner (2020) in spite of these theoretic advancements in the research area, there is no tourism-regional development model that supplies solid theoretical support for policymakers to apply and there is no method of measurement competitiveness, causality, linking factors. Thus, descriptive statistics is the most popular way of proving studies' propositions. But, the pros of these descriptive analyses can be indicated as: more realistic since it is based on real observations. The cons of descriptive analyses are to acquire data. The data is highly localized and it is based on surveys on local tourism stakeholders, so it is expensive. This issue makes these studies incomparable and difficult to adjust same study on other regions. Therefore, it is hard to unite a consensus on a theory.

On the other side, there is an extensive literature which includes empirical work based on statistical and econometric approaches. Williams (2016), Lamonica & Mattioli (2015), Polenske & Hewings (2004) apply different input-output models on their studies. Dong et al., (2018), Cao et al., (2017), Inchausti-Sintes (2015) use

computable general equilibrium models on their tourism-development related studies. The limitation of employing the static CGE (or input-output) methodology lies in its application as an inter-industry model primarily utilized for assessing the economic repercussions of particular occurrences, such as an economic downturn or the impact of a specific industry, such as tourism (e.g., the global financial crisis) or a significant sporting event. As a result, the model does not incorporate demand factors such as elasticities, which determine how demand and supply respond to changes in price. Consequently, it does not provide an estimate of the wider economic impacts. Cao et al. (2017) utilize an econometric technique that combines an econometric model with a two-household CGE model to enhance their analysis. The econometric model, specifically a tourism demand elasticity model, generates adjustments in price elasticity of tourism demand. These modifications are subsequently utilized as inputs in the CGE model to estimate alterations in rural-urban disparities and the resulting welfare of urban and rural households. While this innovative approach offers valuable insights for policy development, its limitation lies in the absence of a theoretical framework to model and test the hypotheses and assumptions made in the simulations. Consequently, the depth of the results is restricted. For instance, it cannot provide an assessment of whether tourism development will have negative effects on income or other industries in the long term.

The study conducted by Zhang et al. (2014) highlights the significance of tourist resources as a crucial territorial asset in the development of tourism. These resources serve as the primary natural foundation and prerequisite for tourism growth, and they are increasingly playing vital roles in contemporary society and the economy. By conducting a complete analysis of the geographical advantages of the Dabie mountain areas, as well as the existing scenic locations and the influence of red culture, the implementation of sports tourist development is carried out. The growth pole hypothesis is a regional economic development theory that is based on economics and operations research. It is a mode that emerges during the process of regional economic development. There are primarily two types of hypotheses on the process of regional economic growth: balanced regional economic development mode and imbalanced

regional economic development mode. The concept of growth pole was introduced by French economist Perroux in the 1950s, based on the idea of abstract economic space. He believed that economic development exhibited unevenness characterized by polarization. This implies the presence of certain focal points within the economic domain that function as magnets, exerting attractive and repulsive forces on external factors. These interactions generate centripetal and centrifugal forces. The convergence of these forces results in the formation of a field, with the growing pole serving as its focal point. Perroux's research progressed from an abstract concept to a theoretical system, providing subsequent guidance. Currently, growth pole theory is not limited to regional economic balance theory, but also has a significant influence on the placement and integrated design of tourism projects. It is crucial to strategically apply the growth pole theory to the development location of the Dabie Mountain sports tourism project, taking into account the existing advantages and opportunities of the Dabie Mountain region. By applying this theory, it becomes evident that it has significant guiding implications for the development location of the Dabie Mountain sports tourism project. The main focus should be on constructing several sports tourism growth poles in a phased manner, and subsequently utilizing their diffusion effects to stimulate the overall tourism and economic development of the Dabie Mountain areas. Prior to the development of the Dabie Mountain sports tourism project, a comprehensive study was conducted on the economic and tourism industry development in the Dabie Mountain area. Based on the growth pole theory, a suitable location for the project development was chosen. This involved selecting different growth poles for each project to prevent unnecessary expenditure and minimize competition within the same area, thereby reducing losses and enhancing economic benefits. Dabie Mountain is located at the junctions of Hubei, Henan, Anhui, and Jiangxi provinces. It should be utilized its strategic location to fully exploit its potential for both domestic and international development. This includes attracting industries from developed areas, transferring capital and technology, and accelerating integration with the Wuhan city circle and surrounding cities. The goal of the study is to establish Dabie Mountain as a hub for industries transferring from developed coastal areas, a center for green agricultural product manufacturing within the Wuhan city circle, a

collective region for modern manufacturing industries, an absorption region for high technology industries, a dispatch region for regional logistics chains, a region for fostering suitable talents, and a tourism region for suburban residents and visitors to Dabie Mountain. Ultimately, the aim is to make Dabie Mountain a rapidly growing economic pole in the area (Zhang et al, 2014).



CHAPTER 3

REMODELING TOURISM DEMAND USING OPTIMAL PREDICTORS

3.1. Introduction

Tourism is a practice that encompasses all travel for leisure, education, business, health and sports purposes, and is also the subject of scientific studies in different fields. The motivation for its implementation is quite personal, tourists are mostly motivated by the desire to discover diverse destinations and acquire unforeseen encounters. In contemporary times, nearly everyone engages in various sorts of tourism. While a tourist may travel to Istanbul to experience the architectural and cultural heritage of the Istanbul Historical Peninsula, another may come to Istanbul to get dental treatment or a hair transplant. Similarly, a traveler may engage in touristic activities because they are curious about the unique geological structure of Cappadocia and its importance in Christian history, while another may visit Akyaka, one of the most popular kitesurfing centers in the world, to go kitesurfing.

Undoubtedly, the travel practices that became popular after the 80s caused the concept of tourism to gain an industrial dimension. The spread of the internet, the intense competition environment in the business world, the desire of individuals and communities to explore cause individual and mass tourism to become an important driving factor in the economies of countries. There are many studies in the literature that provide empirical findings regarding the demand factors of tourism (see Dwyer et al., 2020; Yerdelen-Tatoğlu & Gül, 2020; Carvache-Franco et al., 2018; Liu et al., 2020; Aslan et al., 2008). Studies in the neo-classical perspective, as outlined in microeconomics books (see Pindyck & Rubinfeld, 2001; Dwyer et al., 2020), demonstrate that the demand for a service or good is influenced by various factors. These factors include the price of the product (P_x), the consumer's income (Y), the number of consumers in the market (N), the prices of substitute and complementary products (P_s and P_c), consumer preferences (T), and marketing expenses (M). There

are undoubtedly many non-economic factors affecting demand in the tourism industry, including environmental, sociological, cultural, historical and infrastructural variables.

This section of dissertation has two main purposes. Firstly, it aims to examine the correlation between environmental, historical, and infrastructural features and the dependent variable in regression analysis. Afterwards, to develop an optimal regression model that incorporates economic and non-economic factors that influence tourism in Muğla, a significant destination in the Eastern Mediterranean basin. The second rationale behind writing the paper is to assist regional and tourist policy makers in resource allocation by providing insights in the light of wide set of variables.

This section distinguishes itself from previous studies in the literature by its unique content, data, and methodology. Most of the studies in the literature included economic dynamics in the model, but did not include non-economic factors such as environmental, cultural, historical and infrastructural variables in the model (see Brida & Risso, 2009; Gonzalez & Morat, 1995; Liu et al., 2020). As for the methodology, it is very important for the reliability of the findings that the empirical study should be based on a reasonable theoretical basis. In this study, panel macro data is used in the light of microeconomic theory, with the help of the algorithm of the statistical package program (Stata 18), the optimal model is determined from the tourism demand factors in the multiple regression model. Then, the effects of the independent variables on the dependent variable are analyzed through step-by-step forward selection. The districts of Muğla, located in the Aegean Coast, which is spanned east of the Mediterranean basin, constitute the sample of the study.

While the sample consists of the districts of Muğla, the time period covers the years 2014-2021. First, a large panel dataset that can be related to tourism demand and supply and is accessible is created. Then, this raw dataset is made suitable for creating econometric modeling with preliminary treatments. With the help of algorithms of package programs (Stata 18), the best model that can be created with 26 independent variables that may affect tourism demand (according to statistical information criteria)

is estimated. Independent variables include economic, environmental, infrastructural and social variables.

3.2. Literature Review on Tourism Demand Factors

Carvache-Franco et al. (2018) in their inspiring studies, come across valuable findings on the motivation of touristic activities without doing any economic modeling. Using a questionnaire, variant and bivariate statistical techniques were used to achieve the study objectives. The findings show that the main motivations of tourists are resting, enjoying beach and sun, and delight with local typical gastronomy. The most valued aspects of the visit were residents' hospitality, sun and beach, and restaurant service. The satisfaction of the destination is high, which shows the potential of this destination for this type of tourism. The variables that have a greater influence on overall satisfaction are security, information and signage, restaurant services and places of recreation.

Liu et al. (2020), in contrast to many other research in the literature, uses micro data rather than macro data that was gathered using the query method. It creates the VAR model and the 6-dimensional Baidu index using the data acquired. The results are unexpected. The demand for tourism is influenced by dining, attractions, and shopping; the demand is hampered by travel, tours, and lodging.

In a different panel analysis, Aslan et al. (2008) attempt to use the GMM-Diff estimator to estimate the factors influencing tourist demand over a 10-year period at an annual frequency for the nine most common countries visiting Türkiye. They make estimates based on nationality, in contrast to other studies. They come to the conclusion that tourists' income elasticity is negligible. It is therefore argued that tourism-related activities in Türkiye do not qualify as luxury goods. It is also stressed how little tourists' tastes are sensitive to the cost of living in the host nation. Contrary to predictions, it appears that the Marmara Earthquake had a beneficial impact and infrastructure investments have a negative one. The September 11 Attack has had a negative impact.

When it comes to applying panel data econometric approaches, the research Croes & Vanegas (2005), Garin-Munoz (2006, 2007), Garin-Munoz & Montero-Martin (2007), and Brida & Risso (2009) on the factors influencing tourism demand are pioneers. All of these studies are utilized dynamic models. Croes & Vanegas (2005) concentrate their analysis on the elements influencing the demand for tourism in Aruba. The study's unique component is that it separated visitors to Aruba based on their nationality and concentrated on the variables influencing each group's appetite for travel. Their results suggest that income levels, relative pricing, and delayed arrivals all influence US people's desire to travel to Aruba. Risso & Brida (2009) Travel to South Tyrol, Italy, is considered a luxury by German visitors, who are also very price conscious. Over an extended period, sensitivity increases even more. Simultaneously, as anticipated, travel expenses also adversely affect the demand for tourism.

The groundbreaking study by Yerdelen-Tatloglu & Gul (2020) differs significantly from previous studies in the literature since it employed a three-dimensional panel gravity model and dealt with various destinations. Economic considerations, the distance between the country of origin and the country of destination, and dummy variables such political stability, border, visa requirements, direct flights, etc. are the main independent variables influencing demand in the study. The study's conclusions demonstrate that economic variables significantly affect the flow of foreign tourists. Simultaneously, it is observed that degree of air temperatures positively influence visitor demand, while distance between countries has a negative impact.

Agiomirgianakis et al. (2018) use the error-correction time series model in a different study to assess the short-term effects of the factors influencing Türkiye's demand for tourism. He enumerates the following variables influencing demand for tourism: (i) The opinions of travelers and tour operators on Türkiye as a travel destination are influenced by increases in the volatility of the real exchange rate and shifts in comparable prices. (ii) The demand for Turkish tourism is influenced by human capital. It is anticipated that Türkiye's demand for tourism will benefit from

investments in human resources. (iii) Our research indicates that information, communication, and technology (ICT) play a favorable effect in driving demand for travel. Türkiye may become the preferred destination for tourists if bilateral trade is developed with the host countries.

Unur et al. (2018) use panel data spanning 19 years and 12 Mediterranean nations to examine the demand factors. Dynamic econometric approaches were used with a small data set, similar to many other studies. On the other hand, life expectancy is additionally included as an independent variable. It is clarified as one of the factors influencing the quantity of visitors. The study also found that the per capita income of the host country and foreign exchange reserves have a beneficial impact on the demand for tourism.

It is studied in this paper (Schubert & Brida, 2009) the effects of an increase in foreign income growth, translating in an increase in the growth rate of tourism demand, on economic key variables of a small island economy that is completely specialized in the production tourism services by means of an AK technology. The increase in foreign income growth, leading to a boom in tourism demand, is met by a higher rate of capital accumulation and thus tourism production and a gradually increasing price of tourism services (i. e., the terms of trade), to keep demand in line with supply. The increasing price of tourism services makes investments into tourism production more attractive, speeding thus up its growth rate. Hence, as time passes, the island economy experiences a phase of increasing growth. Eventually, it reaches its new balanced growth path, where prices remain constant and the economy's growth rate is proportional to the growth rate in foreign.

3.3. Methodology

In most studies analyzing tourism demand factors, economic variables are emphasized while social, environmental, cultural and infrastructural variables are neglected. The main reasons for this may be the difficulties in accessing data that will proxy non-economic variables and/or the problems encountered in normalizing the obtained data. In this study, these difficulties are overcome with the data obtained from

local government institutions; in the light of studies conducted with international data, the aim is to provide policy makers with intuitions on resource allocation.

First of all, the mathematical form of the tourism demand function, which we define in accordance with theory, is illustrated in equation (21):

$$Q_D = f(ECO, ENV, HIS, INF, SOC) \quad (21)$$

Q_D represents tourism demand for the destination, ECO represents economic, ENV represents environmental and sustainability-related, HIS represents cultural and historical, INF represents infrastructural, and SOC represents sociological variables.

The first practice of the study is to create a wide set of independent variables that can be related to tourism demand, to create a compatible model by using the algorithm of selecting optimal estimators of the package program (Stata 18). Among all the simple pooled OLS regression combinations that can be created with the independent variables in the dataset, it is to determine the set of independent variables that is most compatible with the dependent variable according to the BIC, AIC, AICC, C information criteria.

After determining the optimal estimators, it is aimed to create a model with reliable coefficients and high significance. There are many theoretical and practical studies on the roadmap to be followed in panel data econometric approaches (e.g. Park, 2011; Baltagi, 2021; Wooldridge, 2010). However, Yerdelen-Tatoglu (2024) practical guidance is used in the econometric process of modeling demand. After estimating the simple OLS model roughly, it is determined whether there are unobserved characteristics. If unit or time effects are found, it is tested whether they are correlated with the independent variables and the appropriate model is decided. For the consistency and effectiveness of the estimator, deviations from the assumption are tested and deviations (if any) are corrected and the estimation is made.

In order to detect the existence of unobserved heterogeneity (and its cause if any), pooled OLS is first estimated. If individual effect u_i (cross-sectional) or time specific effect does not exist ($u_i = 0$ and $\tau_i = 0$), ordinary least squares (OLS) produces efficient and consistent parameter estimates:

$$Y_{it} = \alpha + X'_{it}\beta + \varepsilon_{it} \quad (u_i = 0 \cap \tau_i = 0) \quad (22)$$

In cases where time and group variables affect the dependent variable systematically or not, the pooled OLS model estimators lose their effectiveness. In order to analyze time and unit effects separately, two different least square dummy variable (LSDV) regression (OLS with a set of dummy variables) models are estimated. Then, a time-specific dummy variable is added to the linear OLS:

$$Y_{it} = \tau_i + X'_{it}\beta + \varepsilon_{it} \quad (23)$$

where I denotes origin district and t is time. τ is time specific dummy, X' is matrix of the independent variables, β is the vector of coefficients, ε is identically dependent error term.

In the third regression, the individual specific variable is added to the model to detect the unit specific effect:

$$Y_{it} = \rho_i + X'_{it}\beta + \varepsilon_{it} \quad (24)$$

In this functional form, there is a term ρ unlike the previous one, which proxy the individual effect.

The correct model is constructed by analyzing whether the time and unit effects are systematic. Then, a classical linear regression is created by adding systematic time and unit specific effects. Tests which diagnose if there are multicollinearity, heteroskedasticity, autocorrelation, cross-section dependence are applied to diagnose whether the regression assumptions that ensure the impartiality and effectiveness of the regression estimators are violated. The model is modified according to the test results. In the last stage of the empirical applications, the significant independent variables are added to the regression in order according to the magnitude of their coefficients with the forward-stepwise method and the results are discussed. In the last stage, it is aimed to provide a different perspective on resource transfer to policy makers.

3.4. Data and Sample

The study utilizes panel data, which is a combination of cross and vertical sections. While the units in the cross section are the districts of Muğla; the vertical section consists of the years 2014-2021. The motivation of most tourists visiting

Muğla, which is an important attraction center of the Aegean geography and a very important part of its economy is undoubtedly coastal tourism. However, while the number of blue flag beaches representing the quality of sea water is included in the dataset used, there is no data on the number of sunny days and the structure of the sand. Because the number of sunny days is almost the same in all districts. There is no data on the structure of the beach sand.

The dependent variable that proxy tourism demand is numbers of tourist arrivals, overnight stay or travel exports/imports, while the economic independent variables are origin country income, relative prices of home country competing to destination and transport costs to arrive (see Dwyer et al., 2020; Yerdelen-Tatoglu & Gül, 2020; Song et al., 2009). Inspiration is taken from the ‘Travel & Tourism Competitiveness Report’ created by the World Economic Forum (2013) and the ‘Environmental Performance Index’ studies created by Yale University (2022) regarding the environmental data to be used in the empirical part of the study.

The number of foreign tourists visiting the districts is employed as the dependent variable. The number of observations is 96. In addition, Kavaklıdere district is excluded from the sample in econometric applications because it does not have an accommodation sector and is not visited by foreign tourists. The dataset is also different from the others in the literature in several ways. First, the scope of the dataset. In a large part of the literature, the attempt to explain the demand function with economic variables is striking. In other words, it is seen that tourists visiting a Mediterranean destination ignore many environmental, historical, cultural and infrastructural factors other than economic parameters. There are very few variables to proxy historical and infrastructural assets. Second, there is no panel study in the literature on districts under the same bureaucratic auspices (provincial governance) but with different characteristics.

Table 3.1: Variable Set Construction

Variable Description	Frequency	Source	Variable Construction	Acronym
Inbound Arrivals	Annual data	Republic of Türkiye Ministry of Culture and Tourism, 2023	$AR_{i,t} = \ln (\text{Plus number of international inbound arrivals})$	lnAR
GPD per capita of Europe & Central Asia, adjusted for host price level	Annual data end-of-period values	OECD, 2024; TURKSTAT, 2024	$GDP_{i,t} = \ln (\text{GPD per capita of Europe \& Central Asia/CPI of Türkiye})$	lnGDP
Greece inbound arrivals	Annual data	OECD, 2024	$GRT_{i,t} = \ln (\text{Total number of Greece international arrivals})$	lnGRT
Lagged inbound arrivals*	Annual data	Republic of Türkiye Ministry of Culture and Tourism, 2023	$LaggedAR_{i,t} = \ln (\text{Number of level one lagged international inbound arrivals})$	lnL1AR
Employment in Tourism	Annual data end-of-period values	Muğla Social Security Institution Provincial Directorate, 2022	$LB_{i,t} = \ln (\text{Number of employees in accomadation industry})$	lnLB
Nightlife	Annual data end-of-period values	Muğla Social Security Institution Provincial Directorate, 2022	$NL_{i,t} = \ln (\text{Number of alcohol licensed entertainment establishments})$	lnNL
Room capacity	Annual data (reported in June)	Republic of Türkiye Ministry of Culture and Tourism, 2023	$RC_{i,t} = \ln (\text{Room capacity of accommodation establishments})$	lnRC

Number of Blue Flag Beaches*	Annual data	Republic of Türkiye Ministry of Culture and Tourism, 2023	$BF_{i,t} = \ln (1 + \text{Total number of blue flagged beaches})$	lnBF
Intellectuality Level	Annual data	TURKSTAT, 2023	$HC_{i,t} = \ln (\text{Total number of years of education after basic education according to graduation status} / \text{Population})$	lnHC
Terrestrial biome protection area (km2)	Annual data	Environment and Urban Ministry, 2023	$TBP_{i,t} = \ln [\text{Total terrestrial biome protection are (km2)}]$	lnTBP
Archeological site areas (km2)	Annual data	Muğla Metropolitan Municipality, 2023	$ASA_{i,t} = \ln [\text{Total archeological site area (km2)}]$	lnASA
Ruins & ancient cities	Annual data	Republic of Türkiye Ministry of Culture and Tourism, 2023	$AC_{i,t} = \ln (\text{Total number of ruins and ancient cities})$	lnAC
Sewer line length (km)	Annual data	Muğla Water and Sewerage Administration General Directorate, 2022	$DRA_{i,t} = \ln (\text{Total length of sewer lines (km)})$	lnDRA
UNESCO heritage	Annual data	UNESCO Official Website, 2022	$UH_{i,t} = \ln (1 + \text{Total number of places listed in UNESCO heritage})$	lnUH
Agricultural landscape (km2)	Annual data end-of-period values	Ministry of Agriculture and Livestock, 2023	$AL_{i,t} = \ln [\text{Total agricultural field (km2)}]$	lnAL
Tree cover area (km2)	Annual data end-of-period values	www.globalforestwatch.org	$TC_{i,t} = \ln [\text{Total tree covered area (km2)}]$	lnTC
Purified water (m3)	Annual data end-of-period values	Muğla Water and Sewerage Administration General Directorate, 2022	$PW_{i,t} = \ln [\text{Total amount of water treated by government agencies(m3)}]$	lnPW

Sheep and cattle livestock	Annual data end-of-period values	TURKSTAT, 2023	$GL_{i,t} = \ln (\text{Total number of sheep and cattle livestock})$	lnGL
Maritime enterprises capacity	Annual data	Republic of Türkiye Ministry of Culture and Tourism, 2023	$MC_{i,t} = \ln (1 + \text{Total number of maritime enterprises boat capacity})$	lnMC
Airport capacity & distance to airport	Annual data		$DTA_{i,t} = \ln [\text{Number of parked aircraft capacity}(\text{ranked}) \times \text{Distance of districts to the nearest airport}(\text{ranked})]$	lnDTA
Gravel or asphalt road length	Annual data	Muğla Metropolitan Municipality, 2023	$PL_{i,t} = \ln [\text{Total road length within the district borders}(\text{km})]$	lnPL
Licensed construction area	Annual data	TURKSTAT, 2023	$LC_{i,t} = \ln [\text{Licensed construction area}(\text{km}^2)]$	lnLC
Power Plant Emissions (m3)	Annual data	www.enerjiatlasi.com	$PPE_{i,t} = \ln [1 + (\text{Electricity produced by thermal power plants (kWh)} * 0,3712(\text{lbs CO}_2))]$	lnPPE

Notes: Authors' calculations. Cross-section is composed of districts of Muğla (Bodrum, Dalaman, Datça, Fethiye, Kavaklıdere, Köyceğiz, Marmaris, Menteşe, Milas, Ortaca, Seydikemer, Ula, Yatağan). Time range spans 2014-2021, frequency is yearly and N (cross-section) is larger than t (time). *i* denotes host district and *t* periods.

*(1) Lagged international inbound arrivals are a very important variable as the 'Word-of-mouth' factor increases the appetite of other potential tourists for the mentioned destination (Aslan, 2008) and visitors can visit the destinations they are satisfied with again and again. For example; Statistics and interviews show that the British have not changed much in their touristic patterns in Muğla.

*(2) Determined by International Foundation of Environment and Education.

3.5. Empirical Results

In the empirical process applied in Chapter 3, firstly the determination of optimal variables is made. Then, the existence of unobserved heterogeneity (if any, its source) is determined, and diagnostic tests are applied for possible violations of the assumptions required for the estimators to be BLUE. Then, after making the model selection, the coefficients of the variables are interpreted.

3.5.1. Determining Optimal Independent Variables

After all the data that can be associated with the dependent variable and are accessible are collected, the preliminary treatments detailed in the previous section are applied. Among this potential independent variable set, the ones most related to tourism demand are defined by using the stepwise regression of the packaged programs (Stata 18). It scans all possible combinations with the variables with the classical pooled OLS model; It offers the best models according to the information criteria. While determining the best set of predictors, AIC, BIC, CIC, Adjusted R^2 and Mallows's CP selection criterion are used:

Table 3.2: Determining Optimal Predictors via Stata 18

Models	Independent Variables	Adj. R^2	C	Akaike Information Criterion	AICC	Bayesian Information Criterion
1	lnRC lnGL lnBF lnNL lnPW lnMC lnTC	0,952443	9,67496	86.64265	88,98031	106,3699
2	lnRC lnGDP lnGL lnBF lnPL lnGRT lnNL lnPW lnMC lnTC lnDTA	0,956867	6,465404	81,62749	86,6138	111,2184
3	lnRC lnGDP lnGL lnBF lnPL lnGRT lnNL lnPW lnUH lnMC lnTBP lnTC lnDTA	0,957439	7,715864	82,11391	88,87447	116,6366

*lnAR responses to lnRC lnLB lnHC lnBF lnTBP lnASA lnAC lnUH lnPPE lnAL lnGL lnPW
lnTC lnLC lnMC lnDRA lnDTA lnPL lnNL lnGRT lnGDP.

It is seen that R-squared, AIC and BIC, which are used as model selection information criteria, are used in panel data model selection analyses and give reliable results (e.g. Hsiao and Sun, 2000; Hsiao, 2014). Looking at the information criteria scores, it is seen that all of the models are close to each other in terms of significance according to the information criteria. However, the second ranked model was chosen because it appears to be the most significant model with more information criteria than the others.

We see that the optimal estimators are room capacity of accommodation sector, GDP of Central Europe, number of small and large cattle, asphalt and gravel road length (km), number of inbound tourists visiting Greece, number of restaurants/nightclubs serving alcoholic beverages and/or food (proxy for nightlife), amount of purified water (m3), marina capacity, tree cover area (km2) and airport score (see Table 5.1) respond to number of inbound arrivals.

The main question is the structure of the model. In the table below, firstly the existence of time and/or unit specific effects is investigated. If there is, it is examined whether it is one-way or two-way. The necessary tests for fixed and random effects are performed respectively.

Table 3.3: Panel Data Unobserved Heterogeneity Specification Results

Tests	Null Hypothesis	Model 1	Model 2
F-test for Time Effects (LSDV 1)	H ₀ : Time specific terms do not significantly affect the responses.	2,32**(0,042)	1,80(0,117)
F-test for One-way Time Effects Model	H ₀ : Fixed factor term does not significantly affect the response.	2,17**(0,047)	2,22**(0,042)
B-P Lagrangian multiplier test for random time effects	H ₀ : Variance of the time specific error is zero.	0,00(1,00)	0,00(1,00)

F-test for Individual Effects (LSDV 2)	H ₀ : Individual specific terms do not significantly affect the responses.	1,06(0,40)	2,48**(0,013)
F-test for One-way Individual Effects Model	H ₀ : Fixed factor term does not significantly affect the response.	1,65(0,1052)	2,93*** (0,0033)
B-P Lagrangian multiplier test for random individual effects	H ₀ : Variance of the individual specific error is zero.	0,00(1,00)	1,22(0,135)
Maximum-Likelihood LR Test for Individual Effects	H ₀ : Fixed factor term does not significantly affect the response.	0,00(1,00)	1,13(0,144)
Hausman Test for fixed versus random	H ₀ : Difference in coefficients is not systematic.	9(0,109)	19,95(0,1895)
Robust Hausman Test for clustered fixed and random effects	H ₀ : Difference in coefficients is not systematic	7,48(0,68)	7,54(0,581)

Note 1: The first model consists of the optimal variables determined by the package program. The second model is the model estimated after omitting the 'nightlife' variable, which was found to prevent the normal distribution of the error term.

2: The first value represents the test value, and the value in parentheses represents the probability and where *** p<0,01; ** p<0,05; * p<0,1.

The presence of unobserved heterogeneity is crucial for the consistency and significance of our model's estimators throughout the implementation phase of panel modeling. In this context, the tests appearing in the table were run in order.

In the first model, the results of the time and individual specific effect tests performed with LSDV indicate that there is no systematic or unsystematic individual specific effect in the model, but there is time specific effect. The fixed effect estimation results also confirm the same hypothesis. However, the fact that the value is at the border raises suspicions. Afterwards, the existence of random effect is tested by applying the Breusch-Pagan LM test. However, it is seen that the model is not a random effect. According to the results of the 'Hausman' and 'Robust Hausman' tests, it is decided that the fixed effect is more suitable among random and fixed effects.

However, the maximum-likelihood test applied for the precision of the fixed effect concludes that there is no unobserved heterogeneity originating from time and individual variables. It is concluded that the variables are poolable.

Although there are more signs of individual-specific effects in the second model, the results of subsequent robust tests indicate that the variables are poolable. Therefore, the pooled OLS model is estimated.

3.5.2. Econometric Diagnostic Tests

We obtained the independent variables in our first model with the package program command that determines the optimal predictors. However, when we applied diagnostic tests to this model with 10 independent variables, the reset test and normality tests showed results that would disrupt the BLUE estimator. Some tests showed that the variable affecting the normal distribution of the error terms was 'nightlife'. Therefore, this variable was excluded in the second model and all of the tests and tests were re-applied. Firstly, the multi collinearity between the estimators was tested by VIF. It is seen in Table 3.4 that the VIF criteria is well below 10. There is no perfect multicollinearity. The reset test results highlight the possibility of misspecification in the first model, while the second model shows that there is no omitted variable. White's and Breusch Pagan tests show that the error terms have constant variance in both models. However, Wooldridge and Bias-corrected Born and Breitung (2016) $Q(p)$ serial correlation tests indicates the existence of an autocorrelation problem in the error terms. Error terms are corrected with Arellano's (1987) cluster-robust method. There is no cross-sectional dependence in either model. The second model is employed in the base specification analysis applied in the next sub-section.

Table 3.4: Diagnostic Tests

MULTICOLLINEARITY			
	Model 1 (mean VIF)	Model 2 (mean VIF)	
VIF Test (If bigger than 10, there is perfect collinearity: In Stata 18, variables with high correlation values are excluded from the model.)	6,13	5,43	
MODEL SEPCIFICATION TEST			
	Null Hypothesis	Model 1	Model 2
Ramsey Reset Test for $\widehat{y}^2$ (Prob>F)	No omitted variables	2,86** (0,044)	2,714 (0,11)
NORMALITY and SKEWNESS/KURTOSIS TESTs of Error Terms			
	Null Hypothesis	Model 1	Model 2
Jarque-Bera Normality	Normal distribution	11,28*** (0,003)	1,01 (0,606)
Tests for skewness and kurtosis in the one-way error-components model	Normal distribution	8,34*** (0,015)	2,48 (0,289)
	No skewed	2,88*** (0,004)	0,87 (0,386)
	No kurtosis	-0,17 (0,862)	1,32 (0,188)
HETEROSKEDASTICITY TEST RESULTS			
	Null Hypothesis	Model 1	Model 2
White's Test chi2 (Prob>Chi2)	Homoskedasticity	84,26 (0,267)	77,34 (0,145)
Breusch–Pagan/Cook–Weisberg test for heteroskedasticity (Prob>Chi2)	Homoskedasticity	0,26 (0,61)	0,17 (0,678)
AUTOCORRELATION TEST RESULTS			
	Null Hypothesis	Model 1	Model 2
Wooldridge Test	No autocorrelation	202*** (0,00)	5,77** (0,047)
Bias-corrected Born and Breitung (2016) Q(p)-test	No autocorrelation	7,4*** (0,007)	6,98*** (0,008)
CROSS SECTIONAL DEPENDENCE TEST RESULTS			
	Null Hypothesis		
Pesaran's Test of cross-sectional Dependence (Pr)	There is no cross-sectional dependence	0,812 (0,4168)	1,065 (0,2868)
Friedman's Test of cross-sectional Dependence (Pr)	There is no cross-sectional dependence	3,00 (0,9907)	5,33 (0,912)

3.5.3. Stepwise Serial Correlated Disturbances Robust Pooled OLS

Model

Liang-Zeger (1986) clustered standard errors are measurements that estimate the standard error of a regression parameter in settings where observations may be subdivided into smaller-sized groups ("clusters") and where the sampling and/or treatment assignment is correlated within each group. These errors account for cross-sectional dependencies, enabling more reliable inference even in the presence of these challenges. They allow for arbitrary correlation patterns within clusters while assuming independence across clusters. The key insight is that standard errors are adjusted to reflect variation within clusters, providing a more accurate estimate of uncertainty. They can be applied across various regression frameworks, such as simple pooled ordinary least squares, difference-in-differences. However, their accuracy depends on the number of clusters and the independence assumption across clusters.

We adjust the standard errors to account for within-time correlation, providing robust standard errors that are valid in the presence of autocorrelation within clusters. Districts are clustered. The resulting bias corrected estimator follows the form:

$$\hat{V}(\hat{\beta}) = (X'X)^{-1} \sum_{c=1}^C X'_c \widehat{\Omega}_c X_c (X'X)^{-1} \frac{C}{C-1} \frac{n-1}{n-k} \quad (25)$$

The term ' $\frac{C}{C-1} \frac{n-1}{n-k}$ ' is added to the classical 'sandwich' estimator. Finite-sample modifications are used, to reduce downwards bias due to finite C. Where X is the matrix of independent variables, C is the number of clusters, X_c is the matrix of independent variables for cluster c and $\widehat{\Omega}_c$ is the variance-covariance matrix of residuals for cluster c . The rationale behind clustering standard errors by IDs in panel data analysis is to account for potential correlations within clusters (typically individual units or groups). This approach is especially important when error terms are not independently and identically distributed (i.i.d.) across observations but may be correlated within clusters.

Table 3.5: Liang-Zeger Clustered-Standard Errors Pooled OLS: Dependent Variable: ln(Foreign Arrivals)

VARIABLES	(1)	(2)
lnRC	0.393*** (0.0622)	0.457*** (0.0474)
lnMC	-0.129*** (0.0113)	-0.129*** (0.0152)
lnBF	0.435*** (0.0589)	0.591*** (0.0901)
lnGL	-0.544*** (0.0720)	-0.492*** (0.0762)
lnPL	0.436** (0.190)	0.670*** (0.174)
lnDTA	0.234*** (0.0418)	0.229*** (0.0614)
lnPW	0.174** (0.0580)	0.334*** (0.0938)
lnTC	0.383*** (0.0698)	0.465*** (0.135)
lnGRT	0.173* (0.0916)	0.261*** (0.0829)
lnGDP	0.433 (0.300)	0.397 (0.332)
lnNL	0.509*** (0.135)	- -
Constant	5.526*** (0.528)	-6.389* (3.280)
Observations	87	87
R-squared	0.962	0.955
F-stat	-	3789
F-prob	-	0,000
Number of clusters	12	12
Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

The variables are added to the model hierarchically according to the t-value. The second regression of the table (2) (model excluding 'lnNL' independent variable) is interpreted. Since the values are natural logarithmic, the coefficients can be interpreted as elasticity. When the regression (2) is examined, it is seen that the explanatory power of the road length and number of blue flag beaches are the highest ones, showing that a 1% increase in that independent variables increases the output respectively by 0,67% and 0,59% *ceteris paribus*. A finding that confirms the existence of 'sea-sand-sun' tourism in Muğla districts. The parameter of room capacity is 0,457. In other words, the classical paradigm hypothesis "supply creates its own demand" (Say, 1803) show itself. The negative effect of the marina capacity is noticeable. Since the arrival number is obtained from the records of the accommodation companies, the negative relationship between the total capacity in the marinas and the number of arrivals to the hotels is normal. The negative relationship between the number of farm animals and the number of tourists is obvious. As expected, livestock and tourism are sectors with an inverse relationship in the districts of Muğla. On the other hand, the positive effect of the airport scores of the districts on the number of inbound tourists is quite clear. The variables of the amount of treated water (m3) and the area covered with trees (km2), which were added as an environmental sustainability proxy, also appear to be significant and have high coefficients. On the other hand, one of the surprising results is the positive relationship between the number of visitors to Greece and the number of inbound arrivals in the districts of Muğla. In fact, the islands of Rhodes, Simi, Kos, Kalymnos, Patmos, Meis are quite close to Muğla (2-25 km). It would not be wrong to say that tourists see these islands as complementary products to Muğla. It can be interpreted that tourists visiting these islands also go to the districts of Muğla by ferry. However, surprisingly, the relationship between the change in the GDP level of Central Europe and the dependent variable is not significant. This may be because the small changes in the welfare of Europeans between 2014 and 2021 were not at a level that would affect their decision to go on holiday to Türkiye.

3.6. Conclusion

The results are as expected on the one hand, but surprising on the other. So much so that it is quite clear how determinative the variables that can be associated with environmental quality are. Base specifications prove the importance of sea, forest and sustainability elements in the decision-making mechanism of tourists. The amount of treated water (m³) variable used as an environmental sustainability proxy also has a positive effect on tourism output. On the other hand, it is clear that tourism and animal husbandry sectors are negatively related sectors. Both sad and surprising aspect of the research is that none of the variables that are proxies of Muğla's cultural heritage were among the optimal predictors. However, many of its historical locations are included in UNESCO's temporary or permanent heritage lists. There are dozens of ancient cities and ruins. There are historical castles in many of the districts that are coastal to the sea. In line with new findings, many areas are included in archaeological sites. However, it is surprising that none of the historical-cultural variables are among the optimal variables of tourism demand. It can be concluded that the marketing of Muğla's cultural assets is not/cannot be done correctly. It is an element that policy makers should think about. On the other hand, it is obvious how effective the infrastructural variables are on tourism demand. As such, asphalt and gravel road inventory and airport score are among the most important variables. As transportation becomes easier, tourism output increases. Greece's tourism destinations and Muğla districts also seem to be complementary goods. The results show that visitors to the Greek islands also travel to Muğla for tourism. This indicates bilateral commercial gains can be increased with international cooperation.

CHAPTER 4

CONSTRUCTING ENVIRONMENTAL, HISTORICAL AND INFRASTRUCTURAL COMPOSITE INDICATORS

4.1. Introduction

Composite indicators have become an area of increasing interest in the academic world since the 2000s because they can bring together complex multidimensional realities, provide the opportunity to compare the performances of countries, and facilitate the analysis of their progress over time. Since 2000, many articles and books containing theoretical and practical elements have been written about creating indexes (e.g. Saltelli, 2002; Saltelli et al., 2004; Saltelli, 2007; Saltelli et al., 2008; Saisana M. & Tarantola, 2002; Saisana et al., 2005; Sharpe, 2004).

“Handbook of Constructing Composite Indicators” is a guideline study created by OECD and Joint Research Center EC. It synthesizes and concentrates the studies conducted up to 2008. Therefore, the vast majority of the citations in the theoretical background section are from these two studies.

The “Travel & Tourism Development Index”, which is prepared regularly every year by the World Economic Forum, and the “Environmental Performance Index” reports by Wolf et al. (2022) are a source of inspiration for the research of the environmental, cultural and infrastructural assets of Muğla’s districts, the organization of the collected data and the transformation into composite indicators. In the table below, the subindexes are at the top row, and the variables that make up the subindex are in each row:

4.2. Theoretical Background of Constructing an Index

OECD (2005) presents a detailed study as a guide for creating a composite indicator. It has been jointly prepared by the OECD (the Statistics Directorate and the Directorate for Science, Technology and Industry) and the Econometrics and Applied Statistics Unit of the Joint Research Centre (JRC) of the European Commission in

Ispira, Italy. Primary authors from the JRC and OECD are M. Nardo, M. Saisana, A. Saltelli, S. Tarantola, A. Hoffmann and E. Giovannini. This study, which transformed previous scientific reports and articles (see Bryant & Yarnold, 1995; Cherchye et al., 2008; Hair et al., 1995; Munda & Nardo, 2005; OECD, 2005; Saisana & Tarantola, 2002; Saltelli, 2007) into a systematic whole, was the most utilized study when creating our own index.

OECD's preparation of such a study is undoubtedly due to the need for comprehensive performance data on countries. The strengths and weaknesses of composite indicators are presented in the table:

Table 4.1: Pros and Cons of Composite Indicators

Pros	Cons
Can encapsulate complicated multidimensional realities to aid decision-makers.	Can send incorrect policy suggestions if poorly constructed or misinterpreted.
Are simpler to read than a multitude of distinct indicators.	Might induce oversimplified policy conclusions.
Can evaluate the advancement of countries across time.	Might be abused, for example, to justify a desired policy, if the methodology is opaque or does not follow good statistical or conceptual guidelines.
Minimize the apparent dimensions of a collection of indicators while preserving the foundational data.	Political disagreement may arise over the use of indicators and weights.
Allow for the inclusion of additional information while staying under the current size limit.	May mask significant flaws in some areas and make it more challenging to determine the best course of action for correction if the building process is opaque.
Put matters pertaining to national performance and advancement at the forefront of the policy domain.	May result in unsuitable policies if performance aspects that are challenging to quantify are disregarded.
Simplifies communication with general public (i.e. citizens, media, etc.) and promote transparency.	
Support the creation and structure of narratives for literate and lay audiences.	
Allow users to efficiently compare numerous dimensions.	

Source: (OECD, 2005:13)

OECD (2005) briefly lists the stages of the composite indicator creation process as follows:

- Developing theoretical framework establishes the foundation for the fitness-for-purpose principle's selection and combining of variables to create a meaningful composite indicator (expert and stakeholder participation is anticipated at this stage).
- Data selection process should be based on the indicators' analytical validity, measurability, nation coverage, and applicability to the phenomenon being measured as well as their interrelationships. In situations when data are limited, the use of proxy variables should be taken into consideration (involvement of experts and stakeholders is anticipated at this point).
- Imputation of missing data is required for the purpose to deliver an entire dataset (for example, through the use of single or multiple imputation).
- Multivariate analysis is ought to be used to examine the dataset's general construction, determine its applicability, and direct further methodological decisions.
- Normalization must be completed in order to make the variables comparable to one another.
- Weighting and aggregation have to be carried out in accordance with the underlying theoretical framework.
- Uncertainty and sensitivity analysis should be carried out in order to evaluate the composite indicator's resilience with respect to the mechanism for adding or removing indicators, the normalization plan, the imputation of missing data, the selection of weights, and the aggregation technique.
- Back to the data is required to identify the primary factors influencing overall performance, whether positive or negative. Transparency is essential for effective analysis and policymaking.
- Links to other indicators is necessary to correlate the composite indicator (or its dimensions) with existing (simple or composite) indicators and to uncover correlations through regression analysis.

- Visualization of the results warrants appropriate attention, as the visualization can affect or improve interpretability.

The steps for creating a composite indicator are detailed with examples in the subheadings:

4.2.1. Developing Theoretical Framework for Composite Indicator

Creating a quality framework for composite indicators is a challenging endeavor. The overall quality of the composite indicator is contingent upon various factors, including the quality of the underlying data utilized in its formulation and the robustness of the methodologies employed in its production. Quality is typically characterized as “fitness for use” about user requirements. This concept is broader than previous interpretations, which linked quality just with accuracy. It is now widely acknowledged that there are additional significant dimensions. Data, regardless of accuracy, cannot be deemed of high quality if they are generated too late to be beneficial, are not readily accessible, or seem to contradict other data. Consequently, quality is a multifaceted term. The paramount quality qualities are contingent upon user viewpoints, requirements, and priorities, which differ among user groups.

The International Money Fund (2003) provides a comprehensive perspective on data quality in its “Data Quality Framework (DQAF)” study, which was created to determine the quality of statistics with generally accepted criteria. It lists six criteria regarding data quality as follows:

- Prerequisites of quality: Providing data from official institutions, not using data for purposes other than academic.
- Assurance of integrity: The idea of objectivity in the collecting, processing, and dissemination of statistics is rigorously maintained.
- Methodological integrity: How do the existing processes align with the globally established methodological standards for particular statistical activities?

- Accuracy and reliability: The source data and statistical methods are robust, and the statistical results accurately reflect reality.
- Serviceability: Statistics are consistent and adhere to a predictable revisions policy, with sufficient frequency and timeliness.
- Accessibility: Access to data and information is effortless, and user support is sufficient.

One illustrative instance is the measurement of gross domestic product (GDP), which quantifies the aggregate worth of products and services generated inside a certain nation. The weights assigned to different components of GDP are derived from economic theory and are indicative of the relative prices of goods and services. The development of theoretical and statistical frameworks for measuring GDP has spanned a period of around 50 years. Currently, the major international organizations are in the process of revising the 1993 System of National Accounts. Nevertheless, it is important to note that not all multi-dimensional notions possess equally robust theoretical and empirical foundations. Composite indicators in developing policy areas like as competitiveness, sustainable development, and e-business preparedness may possess a high degree of subjectivity due to the ongoing development of economic research in these domains. Therefore, the establishment of credible indicators necessitates the incorporation of transparency. Firstly, the concept must be defined clearly. The provided definition should aim to provide the reader with a comprehensive understanding of the specific construct or concept being assessed by the composite indicator. The text should make reference to the theoretical framework, establishing connections between different sub-groups and the underlying indications. An illustration of this may be seen in the Growth Competitiveness Index (GCI) formulated by the World Economic Forum, which is based on the premise that the examination of economic growth can be delineated into three overarching domains: the macroeconomic context, the efficacy of public institutions, and technological advancements. The Global Competitiveness Index (GCI) exhibits a discernible connection between the framework, which pertains to a certain concept or system, and the arrangement of the composite indicator. Certain intricate notions, however, pose

challenges in terms of accurate definition and measurement, and may also give rise to disagreements among various stakeholders. In the final analysis, it is incumbent upon the consumers of composite indicators to evaluate both the caliber and pertinence of said indicators. Then, multi-dimensional notions can be categorized into multiple sub-groups. The independence of these sub-groups from each other may not be necessary from a statistical perspective, and it is important to provide a thorough theoretical or empirical description of any existing connections. The Technology Achievement Index is theoretically categorized into four distinct groups that represent different aspects of technological capacity. These divisions include the production of technology, the dissemination of new innovations, the dissemination of older technologies, and the development of human capabilities. The utilization of a nested structure enhances the comprehension of the underlying factors that contribute to the composite indicator. Additionally, it could potentially facilitate the process of ascertaining the comparative significance of various aspects. It is recommended that experts and stakeholders be actively involved in both this stage and the subsequent one. This is important in order to consider a variety of perspectives and enhance the strength and reliability of the conceptual framework and collection of indicators. Lastly, the selection criteria should serve as a guiding principle in determining whether an Indicator should be incorporated into the comprehensive composite index. The description provided should strive for maximum precision and accurately depict the occurrence under observation, specifically referring to the input, output, or process being assessed. Composite indicators frequently incorporate a combination of input and output metrics. As an illustration, an Innovation Index has the potential to integrate the inputs of research and development expenditures along with the outputs of new products and services. This amalgamation would enable the assessment of the extent of innovative endeavors within a specific nation. However, it is important to include only the latter set of output indicators, or quantify them in terms of output per unit of input, if the purpose of the index is to measure innovation performance (Nardo et al., 2005).

4.2.2. Selecting Variables

The efficacy and limitations of composite indicators are primarily contingent upon the caliber of the underlying variables. Ideally, the selection of variables should be based on their relevance, analytical rigor, timeliness, and accessibility, among other factors. The selection of indicators for a composite measure should be led by the underlying theoretical framework. However, the process of data selection might be subjective, as there may not be a universally agreed-upon collection of indicators. The developer's capacity to construct reliable composite indicators may be constrained by a dearth of pertinent data. Due to a limited availability of internationally standardized quantitative data, composite indicators sometimes incorporate qualitative data obtained through surveys or policy assessments. Proxy measures are utilized in situations where the required data is not accessible or where there are limitations in cross-country comparison. For instance, there may be a lack of available statistics regarding the quantity of employees utilizing computers. Alternatively, the utilization of the number of employees with computer access may serve as a surrogate measure. When dealing with soft data, it is important to exercise caution when using proxy indicators. It is advisable to assess the accuracy of proxy measures by doing correlation and sensitivity analysis, to the extent that the available data allows. The factors we need to consider when choosing data are as follows (Nardo et al., 2005):

- **Relevance** — The data should possess the capacity to demonstrate environmental concerns across several districts over the specified timeframe.
- **Policy Orientation** — The augmentation of data should be achieved by political initiatives. In essence, externalities that are beyond the purview of policymakers and are not amenable to intervention are excluded from consideration as part of the indicator.
- **Spatial completeness** — Refers to the meticulous attention given to ensuring that data is readily available and comparable across different geographical locations worldwide.
- **Time series data** — plays a crucial role in the application of econometric methodologies.

➤ Reliability — is a crucial aspect when utilizing secondary data, as it necessitates obtaining data from reputable sources.

The builder should also exercise careful consideration of the indicator's dependence on GDP or other aspects related to size. In order to facilitate an unbiased comparison between small and large countries, it is necessary to adjust the variables being analyzed using a suitable measure of size, such as population, income, trade volume, and inhabited land area. It is imperative that the selection of variables, whether they be input, output, or process indicators, aligns with the defined criteria for the composite indicator in question. The continuous enhancement of data collection and indicator creation should be accompanied by a corresponding advancement in the quality and precision of composite indicators. The present inclination towards developing composite indicators to evaluate the performance of countries across several policy domains may serve as a catalyst for enhancing data collecting, establishing novel data sources, and improving the international comparability of statistical information. However, it is important to note that we do not subscribe to the notion that utilizing existing resources is inherently sufficient. Insufficient quality of data will yield unsatisfactory outcomes in accordance with the principle of “garbage-in, garbage-out.” From a pragmatic perspective, it is necessary to make sacrifices when developing a composite. The crucial aspect that we consider necessary is the transparency of these tradeoffs (OECD, 2008).

4.2.3. Imputation of Missing Data

There are different methods of filling in missing data. In “single imputation method”, the means or draws from a predictive distribution of missing variables are known as imputations. Either implicit or explicit modeling must be used to use the observed data in order to construct the prediction distribution.

In another method, “unconditional mean imputation”, the arithmetic mean, median or mode of the same data series is used instead of missing data.

Another method is “regression imputation”. It is a two-stage data generation method. Regression imputation is still feasible when the variable with missing

observations is categorical; however, adjustment is necessary. This can be done by, for instance, rounding the predictions or utilizing a logistic, ordinal, or multinomial logistic regression model.

Another method is “expected maximization imputation”. The data imputation process applied by combining several different methods is called “multiple imputation”.

4.2.4. Multivariate Analysis

It would not be wrong to consider the processes so far as the preparation period before creating the indicator. The act of creating the indicator practically begins at this stage.

The analysis of a dataset including sub-indicators that assess the performance of several countries, cities, or districts can be examined from two perspectives: the sub-indicators themselves and along the countries being evaluated. These dimensions are interdependent and cannot be analyzed in isolation (Nardo et al., 2005).

- Information on sub-indicators: The initial step for the analyst is determining the clarity of the layered structure of the composite indication and evaluating if the existing sub-indicators adequately and appropriately capture the unknown phenomena. The determination of this decision can rely on the expertise of individuals in the respective sector who can provide insights into whether indicators effectively measure the sustainability or quality of education. Additionally, the statistical composition of the dataset can also play a role in informing this decision. Factor Analysis and Reliability/Item Analysis can be employed in a complementary manner to examine the extent to which the many characteristics of a phenomena are statistically well-balanced within the composite indicator. If the veracity of this statement is in question, it may be necessary to reevaluate the composition of the sub-indicators. In the context of the e-business readiness index, it is evident that the significance of human capital is underestimated, while the importance of the technological aspect is

emphasized. In the aforementioned instance, there is insufficient statistical evidence to substantiate the differentiation between the “use” and “adoption” of information and communication technologies. This is evident from the Principal Components Analysis, which reveals that certain sub-indicators originally categorized under “use” exhibit stronger associations with the sub-indicators pertaining to “adoption” in terms of conceptual allocation.

- Information on countries: Cluster analysis is a valuable approach for categorizing countries based on the similarities observed among various sub-indicators. It can be employed as a statistical technique for aggregating data, as well as a diagnostic tool to evaluate the influence of methodological decisions made during the development of composite indicators. Additionally, cluster analysis can facilitate the dissemination of information regarding composite indicators while retaining the details pertaining to the sub-indicators. Moreover, it can be utilized to identify groups of countries suitable for imputing missing data, thereby reducing the variability of the imputed values.

The most commonly used methods to collect grouping information on sub-indicators are Principal Component Analysis, Factor analysis and Cronbach Coefficient Alpha methods. One of the most commonly used methods to categorize countries and similar units is cluster analysis.

The first model of multivariate analysis that we flash on is the principal component model. In the principal component analysis method, the goal is to use a few linear combinations of the original data to explain the variance of the observed data. Much of the variation in the data can frequently be explained by a small number of uncorrelated principal components, or linear relations of the original data, $Z_1, Z_2, \dots, Z_Q$, even though there are Q variables, $x_1, x_2, \dots, x_Q$. There are currently Q major components, or the same number as there are variables. The next stage is to choose the first principal components, such as $P < Q$, that maintain a “high” proportion of the original data’s cumulative variance (OECD, 2005).

$$Z_1 = \alpha_{11}x_1 + \alpha_{12}x_2 + \dots + \alpha_{1Q}x_Q \quad (26)$$

$$Z_2 = \alpha_{21}x_1 + \alpha_{22}x_2 + \dots + \alpha_{2Q}x_Q \quad (27)$$

...

$$Z_Q = \alpha_{Q1}x_1 + \alpha_{Q2}x_2 + \dots + \alpha_{QQ}x_Q \quad (28)$$

One beneficial attribute is the absence of correlation among the primary components. It suggests that the data's many "statistical dimensions" are being measured by the primary components. Principal Components study (PCA) can be used to some extent to accomplish economy when the goal of the study is to display a large data set using a limited number of variables, provided that a small number of Z variables can account for the variation in the Q original x variables. It must be emphasized that a big number of original variables cannot always be reduced to a small number of transformed variables using PCA. In fact, the analysis is useless if the initial variables had no correlation. Conversely, when the initial variables have a high degree of correlation, either positively or negatively, a large reduction can be achieved (OECD, 2005).

Principal components are determined by applying weights a_{ij} (also known as component or factor loadings) to the variables x_j in equation (1) so that the following requirements are met by the principal components Z_i (OECD, 2005):

- They are orthogonal (uncorrelated).
- where a_{ij} are the factor loadings, $x_1, x_2, \dots, x_Q$ are the variables (indicators), and Q is the number of variables. The first principal component accounts for the maximum possible proportion of the variance of the set of x 's, the second principal component accounts for the maximum of the remaining variance, and so on until the last of the principal components absorbs all the remaining variance not accounted for by the preceding components.

$$a_{i1}^2 + a_{i2}^2 + \dots + a_{iQ}^2 = 1, \quad i = 1, 2, \dots, Q \quad (30)$$

Where a_{ij} are the factor loadings, x_Q are the indicators.

$$CM = \begin{bmatrix} cm_{11} & \dots & cm_{1Q} \\ \vdots & \ddots & \vdots \\ cm_{Q1} & \dots & cm_{QQ} \end{bmatrix} \quad (31)$$

CM represents the covariance matrix. Principal component analysis involves finding the eigenvalues of the CM covariance matrix:

$$\lambda_1 + \lambda_2 + \dots + \lambda_Q = cm_{11} + cm_{22} + \dots + cm_{QQ} \quad (32)$$

In other words, the total variance of the original variables equals the total variance of the principal components. It is examined how much of the total variance each of the eigenvalues explains. Each eigenvalue represents an unobservable variable, that is, the factors used to categorize the variables. The eigenvalue of each factor has a variance equal to the percentage ratio among all eigenvalues. The weighting of the variables within the factor can also be done according to the change it creates in the variance (Nardo et al., 2005).

Another multivariate analysis method is factor analysis. Factor analysis (FA) shares similar objectives with principal component analysis (PCA). The fundamental concept is that there exists a potential to articulate a collection of Q variables, denoted as $x_1, x_2, \dots, x_Q$, through a reduced number of m factors. This approach allows for a clearer understanding of the interconnections among these variables. The model is expressed in a general manner as follows (OECD, 2005):

$$x_1 = \alpha_{11}F_1 + \alpha_{12}F_2 + \dots + \alpha_{1m}F_m + e_1 \quad (33)$$

$$x_2 = \alpha_{21}F_1 + \alpha_{22}F_2 + \dots + \alpha_{2m}F_m + e_2 \quad (34)$$

...

$$x_Q = \alpha_{Q1}F_1 + \alpha_{Q2}F_2 + \dots + \alpha_{Qm}F_m + e_Q \quad (35)$$

Let x_i represent a variable with a mean of zero and a variance of one. The factor loadings $\alpha_{i1}, \alpha_{i2}, \dots, \alpha_{im}$ are associated with the variable x_i . $F_1, F_2, \dots, F_m$ are m uncorrelated common factors, each with a mean of zero and a variance of one. The specific factors e_i are assumed to be independently and identically distributed with a mean of zero. There are multiple methodologies for addressing the model presented in the last equation, such as communalities, maximum likelihood factors, centroid method, primary axis method, among others. Various sources provide varying values for the factors. Once the number of components to retain has been determined, it is customary to execute a rotation procedure in order to improve the interpretability of the findings. Rotation does not impact the sum of eigenvalues, but it does vary the eigenvalues of specific factors and the corresponding factor loadings by changing the

axes. There are several rotational techniques as varimax and promax. The objective of all these tactics is to acquire a distinct pattern of loadings. Nevertheless, varying rotations result in distinct loadings, leading to varied interpretations of principal components. This issue is often identified as a limitation of the method. The most often employed rotation techniques in academic research are known as the “varimax rotation” and “promax rotation”.

The third most commonly used method is the Cronbach Coefficient Alpha (Cronbach, 1951). It is a method that measures the internal consistency of a model, that is, performs “reliability/item analysis”. Alpha is defined as:

$$\alpha_c = \left(\frac{Q}{Q-1} \right) \frac{\sum_{i \neq j} cov(x_i, x_j)}{var(x_0)} = \left(\frac{Q}{Q-1} \right) \frac{\sum_j var(x_j)}{var(x_0)} \quad (36)$$

so that,

$$c = 1, \dots, M; j = 1, \dots, Q \quad (37)$$

where Q is the number of available individual indicators, M is the number of countries taken into consideration, and $x_0 = \sum_{j=1}^Q x_j$ is the sum of all individual indicators. The percentage of the sample’s overall variability attributable to the correlation between the indicators is measured by C-alpha. It rises as the number of distinct indicators and each pair’s covariance increase. C-alpha is equal to zero when there is no correlation and each indicator is independent, and it is equal to one when there is perfect correlation between the indicators. C-alpha is a reliability coefficient based on the correlation between individual indicators rather than a statistical test. In other words, a high co’relation suggests that the various indicators are assessing the same underlying construct. Thus, a high “reliability” or c-alpha suggests that the individual indicators accurately capture the hidden phenomenon. Despite being popularly understood to be such, c-alpha is not, strictly speaking, a measure of one-dimensionality. It is possible for a collection of distinct indications to be multi-dimensional and have a high alpha. This occurs when distinct clusters of independent indicators (different dimensions) exhibit strong intercorrelation despite the clusters’

lack of strong correlation. There is no consensus on what c -alpha should be. The general consensus is that it should be above 0.6. However, there are studies that indicate that above 0.5 is also acceptable.

A very popular method used to categorize countries, types and units is cluster analysis'. The classification process is designed to minimize the dimensionality of a data set by leveraging the similarities and differences between cases. CLA techniques can be either hierarchical, which is applicable when the classification involves an increasing number of nested classes, such as tree clustering, or non-hierarchical, which is applicable when the number of clusters is determined beforehand, such as k-means clustering. Nevertheless, it is imperative to ensure that classes are meaningful and not arbitrary or artificial. It is possible for individual indicators to be multidimensional and have a high alpha. This occurs when there are distinct clusters of individual indicators (separate dimensions) that exhibit a high degree of intercorrelation, despite the fact that the clusters themselves are not highly correlated.

The following step is to select the clustering algorithm, which specifies the rules that regulate the measurement of distances between clusters. There are numerous approaches to this. The selection criteria may vary, resulting in varying classifications for the same data, despite the use of the same distance measure. The linkage principles that are most frequently employed are as follows (Spath, 1980 as cited in OECD, 2005):

- Single linkage (nearest neighbor): The distance between two clusters is determined by the distance between the two nearest elements in the two clusters. This rule generates clusters that are linked by individual objects.
- Complete linkage (farthest neighbor): The greatest distance between any two objects belonging to distinct clusters is the determinant of the distance between two clusters. When objects organically form distinct groups, this method typically performs well.
- Pair-group average without weighting: The average distance between all pairs of objects in the two clusters is used to calculate the distance between the two

clusters. When objects organically form distinct groups, this method typically performs well. The centroid of a cluster is employed in a variation of this method, where the distance is the average point in the multi-dimensional space defined by the dimensions.

- Average of the weighted pair-group: The average distance is weighted by the size of the cluster, which is the number of objects contained, in contrast to the unweighted pair-group average (centroid included). This approach is advantageous when cluster sizes are dramatically disparate.
- Ward's method (Ward, 1963, as cited in OECD, 2008): The variance of elements, which is the sum of the squared deviations from the cluster mean, is used to ascertain cluster membership. An element will be included in the cluster if it results in the least amount of variance increase.

There are many $D(x,y)$ (distance functions) that are used to measure the distance between objects x and y within certain indicators. These are Euclidean, Squared Euclidean, Manhattan, Chebychev, Power and percent disagreement functions. The formulas and definitions of the functions are included in the OECD (2005:75) report.

4.2.5. Normalization

The goal is to determine the most appropriate normalization procedures for the current issue, considering their robustness against potential outliers in the data and their properties in relation to the measurement units in which the indicators are expressed (Ebert & Welsch, 2004, as cited in OECD, 2005). For the composite indicator, the results will vary depending on the normalization procedure used. Consequently, it is imperative to conduct comprehensive robustness tests in order to evaluate their influence on the results.

The characteristics of the data used may be quite different from each other. While the experiment of one variable is m^3 , the experiment of another is hectares and the other is units. There are also outliers in the sample. This can create quite high variances. In other words, making the data comparable with each other instead of trying to combine apples and oranges increases the reliability of the indicator. Due to

the difficulties in comparing data that are not at the same level or outlier data existing, the data may need to be scaled by population, area or income in order to be relative. Or there may be high skewness in the data, and in such cases, converting to logarithmic values is quite accurate.

There are numerous methods to normalize data. They are listed on the next table:

Table 4.2: Normalization Methods

Method	Equation
Ranking	$I_{qc}^t = \text{Rank}(x_{qc}^t)$
Standardization (or z-scores)	$I_{qc}^t = \frac{x_{qc}^t - x_{qc=\bar{c}}^t}{\sigma_{qc=\bar{c}}^t}$
Min-Max	$I_{qc}^t = \frac{x_{qc}^t - \min_c(x_{qc}^t)}{\max_c(x_{qc}^t) - \min_c(x_{qc}^t)}$
Distance to a reference country	$I_{qc}^t = \frac{x_{qc}^t}{x_{qc=\bar{c}}^t}$
Categorical scale	$I_{qc}^t = \begin{cases} 0 & \text{if } x_{qc}^t < 25 \\ 37,5 & \text{if } 25 < x_{qc}^t < 50 \\ 62,5 & \text{if } 50 < x_{qc}^t < 75 \\ 100 & \text{if } 75 < x_{qc}^t < 100 \end{cases}$
Indicators above or below the mean	$I_{qc}^t = \begin{cases} 1 & \text{if } w > (1 + p) \\ 0 & \text{if } (1 - p) \leq w \leq (1 + p) \\ -1 & \text{if } w < (1 - p) \end{cases}$
Cyclical Indicators (Organization for Economic Co-Operation and Development)	Where $x_{qc}^t/x_{qc=\bar{c}}^t$ $I_{qc}^t = \frac{x_{qc}^t - E_t(x_{qc}^t)}{E_t(x_{qc}^t - E_t(x_{qc}^t))}$
Balance of Opinions (European Commission)	$I_{qc}^t = \frac{100}{N_e} \sum_e^{N_e} \text{sgn}_e(x_{qc}^t - x_{qc}^{t-1})$
Percentage of annual differences over consecutive years	$I_{qc}^t = \frac{x_{qc}^t - x_{qc}^{t-1}}{x_{qc}^t}$

Note: x_{qc}^t is the value of indicator q for country c at time t. $\bar{c}$ is the reference country. Operator sgn gives the sign of argument. N_e is the total number of experts surveyed. E_t is the arithmetic mean operator.

Source: (OECD, 2005:30)

In the ranking method, there is an arithmetic rank of every observation x_{qc}^t . The I_{qc}^t value is whatever rank it is. (e.g. If x_{qc}^t is 32th place, indicator value is 32.)

Standardization (z-score) is a method frequently used in statistics. From each observation, the value of the reference country is subtracted, then a z-score is obtained with the standard deviation of the same sample. It is a good method to reduce the effect of outliers while achieving scale compatibility.

In the min-max method, the arithmetic mean in the standardization method is replaced by the smallest value of the variable sample to which the observation belongs. The standard deviation is replaced by the difference between the largest and smallest values.

In the Distance to a reference country method, as the name suggests, the indicator value is obtained by dividing each observation by the variable mean of the reference country.

There are no intermediate indicator values in the categorical scale. The decision is made according to where the observation is on the thresholds. Indicators above or below the mean are also similar to the categorical scale. The decision is made according to where the observation is on the arithmetic mean.

Cyclical indicators and balance of opinions methods are being used by OECD and EC respectively. The transformation can be performed by subtracting the mean over time $E_t(x_{qc}^t)$ from the time series indicators and subsequently dividing the result by the mean of the absolute values of the difference from the mean. The series are subsequently transformed into index form by adding 100.

‘The Balance of Opinions’ method has a different characteristic than others. Expert opinions are used.

The normalization method is decided according to the characteristics of the data set.

4.2.6. Weighting

Weights can significantly impact both the country rankings and the final composite indicator when utilized in a benchmarking framework. There are several weighing methods. Some come from participatory techniques like budget allocation processes (BAP), analytical hierarchy processes (AHP), and conjoint analysis (CA), while others are based on statistical models like principal component factor analysis (PCFA), data envelopment analysis (DEA), and unobserved components models (UCM). The “Toolbox for Constructors” explains conjoint analysis and unobserved component techniques. Weights are basically value judgments, regardless of the approach taken. In order to better reflect theoretical considerations or policy priorities, some analysts may select weights solely based on statistical techniques, while others may reward (or penalize) elements that are judged more (or less) significant based on expert judgment (OECD, 2005:31; Nardo et al., 2005; Munda & Nardo, 2005).

The majority of composite indicators use equal weighting (EW), which assigns the same weight to each component. This basically means that every variable in the composite has the same “worth,” but it could also mean that there isn’t a statistical or empirical foundation, as in the case of a lack of agreement on the alternative or insufficient understanding of causal links. In any event, equal weighting suggests that the weights are equal but does not actually mean “no weights.” Furthermore, assigning equal weighting to the variables may imply an unequal weighting of the dimensions if the variables are grouped into dimensions, which are then further aggregated into the composite (the dimensions grouping the larger number of variables will have higher weight). This can cause the composite index to have an uneven structure (OECD, 2005:31).

Additionally, weights can be selected to represent the data’s statistical quality. Broadly covered, statistically sound data could be given higher weights. However, this approach could penalize information that is statistically more difficult to find and measure in favor of the easily accessible indicators (OECD, 2008:32).

To create a composite indicator that captures as much of the information shared by individual indicators as feasible, principal components analysis—more especially, factor analysis—groups together collinear individual indicators. Keep in mind that every indication needs to use the same measurement unit. The set of indicators that each factor has the strongest correlation with is revealed by the factor itself, which is often evaluated using principal components analysis. The goal of PCA/FA is to use the fewest number of factors to account for the greatest amount of variation in the indicator set. Consequently, the composite is now based on the “statistical” dimensions of the data rather than the dimensionality of the data set. PCA/FA states that weighting is not a measure of the theoretical significance of the associated indicator; rather, it just corrects for overlapping information between two or more correlated indicators. Weights cannot be estimated using this method if there is no association between the markers (OECD, 2005:89).

There are 9 fundamental methods that can be used for weighting. The methods mentioned below are briefly discussed (OECD, 2005):

Weights based on principal components analysis or factor analysis combines collinear separate indicators to create a composite indicator that captures the shared information among the individual indicators. The objective of PCA/FA is to capture the maximum amount of variance in the indicator set while minimizing the number of factors used. Thus, the composite is no longer influenced by the number of dimensions in the data set, but rather by the statistical characteristics of the data (Nardo et al., 2005).

Data envelopment analysis (DEA) employs linear programming techniques to calculate an efficiency frontier, which serves as a baseline for evaluating the relative performance of different countries. To accomplish this, it is necessary to create a benchmark, also known as the frontier, and then calculate the distance between countries using a multi-dimensional framework.

In the unobserved components model (UCM), it is assumed that individual indicators are influenced by an unobserved variable and an error term. For instance,

the “percentage of firms using internet in country j” is influenced by the unknown tendency to adopt new information and communication technologies, as well as an error term that accounts for sampling errors in firms. Thus, approximating the unidentified element provides insight into the correlation between the composite and its constituent parts. The weight acquired will be adjusted to minimize the inaccuracy in the composite. This method exhibits some similarities to the widely recognized regression analysis.

Budget allocation process (BAP), experts on a given theme (e.g., innovation, education, health, biodiversity, etc.) are tasked with allocating a “budget” of one hundred points to the indicator set during the Budget Allocation Process (BAP). Their decision is based on their personal judgment and experience regarding the relative significance of each indicator. The weights are determined by averaging the budgets. The primary benefits of BAP are its brief duration and transparent, relatively uncomplicated nature. It is critical to assemble a group of specialists with a broad range of expertise and knowledge in order to establish an appropriate weighting system.

In the ‘Public opinion’ method, the concept of “concern” is the focal point of opinion surveys from a methodological standpoint. PEOPLE are requested to indicate the extent of their apprehension (e.g., minor or major) regarding matters, as assessed by foundational indicators. The budget allocation method, similar to expert assessments, could be implemented in public opinion surveys. Assembling a degree of concern regarding a particular issue is considerably simpler than requesting the public to assign one hundred points to a number of distinct indicators.

To estimate an efficiency frontier that would serve as a standard by which to compare the relative performance of nations, Data Envelopment Analysis (DEA) uses linear programming tools. To do this, a benchmark (the boundary) must be built, and the distance between nations must be measured using a multifaceted framework.

4.2.7. Aggregation

By far the most commonly used linear aggregation method is to obtain the score by adding together weighted and normalized individual indicators:

$$Index_c = \sum_{q=1}^Q Weight.Indicator_{qc} \quad (38)$$

$$\text{With } \sum_q w_q = 1 \text{ and } 0 \leq w_q \leq 1 \text{ for all } q = 1, \dots, Q \text{ and } c = 1, \dots, M \quad (39)$$

The raw composite index is calculated by aggregating the normalized indices of each component series in the OECD system. A linking factor is employed to connect the body of an index to a composite index that was calculated on an incomplete set of data. Cyclical indicators necessitate timeliness and the absence of excessive revisions (Nillson, 2004).

The most straightforward additive aggregation method involves the summation of the resulting rankings and the calculation of each country's ranking based on each individual indicator (OECD, 2005):

$$Index_c = \sum_{q=1}^Q Rank_{qc} \text{ for } c = 1, \dots, M \quad (40)$$

The second method is predicated on the number of indicators that are both above and below a specified benchmark. The difference between the number of indicators above and below an arbitrarily defined threshold around the mean is calculated using nominal ratings for each indicator in this method (OECD, 2008):

$$Index_c = \sum_{q=1}^Q \cdot sgn \left[\frac{I_{qc}}{I_{EUq}} - (1 + p) \right] \text{ for } c = 1, \dots, M \quad (41)$$

The significance of weights in linear aggregation rules is consistently that of a trade-off ratio. Consequently, a theoretical inconsistency exists, as weights are employed as importance coefficients in conjunction with linear aggregation methods in the standard practice of constructing a composite indicator. The discrepancy is

applicable to the majority of empirical applications. The trade-off method is the sole technique capable of generating theoretically consistent weights when a linear aggregation rule is implemented. From an operational standpoint, this approach is exceedingly intricate. Additionally, the assumption that the variable scores are measured on an interval or ratio scale of measurement and that there is no uncertainty must always be applied. In the context of composite indicators, this is a rare occurrence. For example, variable scores that were initially measured on an ordinal scale may be indiscriminately assigned quantitative scores. Compensability among the various individual indicators must always be presumed in standard composite indicators that are based on the linear aggregation rule. This implies complete substitutability among the various components considered. For instance, in a hypothetical sustainability index, economic growth can always replace any environmental devastation. On the other hand, in the environmental dimension, clean air can compensate for a loss of potable water. A comprehensive compensability is frequently unfavorable from a descriptive perspective. The aggregation algorithm must be a Condorcet consistent rule whenever weights are used in the context of importance coefficients. Additionally, it is advantageous to implement these regulations for more general reasons. In particular, it is important to understand that the measurement scale of the variable scores is not restricted by the Condorcet aggregation rules. The price to pay is the potential loss of information regarding the intensity of preference (Munda & Nardo, 2005).

The quality of each indicator is important for the effectiveness of linear addition methods. There should be a “preference independent” condition between variables. Such that inadequate performance in certain indicators can be compensated for by sufficiently high values in other indicators. For example, if a single index value is created based on democracy, environmental degradation, and welfare levels, if one of the two countries has a score of 3, 3, 3 and the other has a score of 7, 1, 1, the social conditions of the two countries will be quite different from each other, even if the linear sum of the two is equal. The geometric sum method offers an in-between solution:

$$Index_c = \prod_{q=1}^Q x_{q,c}^{w_q} \quad (42)$$

Where x represents individual variable, w is weight and c country. In the example mentioned above, the geometric sum of the first country is 27, while the second is 7. The effect of the unit increase in individual indicators in the first country is greater than that in the second country. As a result, a country would be more motivated to resolve sectors, activities, or alternatives with low scores if the aggregation were geometric rather than linear, as this would increase its likelihood of improving its ranking.

4.2.8. Uncertainty and Sensitivity Analysis

Uncertainty analysis (UA) and sensitivity analysis (SA) are recommended as two combined instruments. The values of the composite indicator are influenced by the propagation of uncertainty in the input factors through the structure of the composite indicator, which is the primary focus of UA. SA investigates the extent to which each source of uncertainty contributes to the output variance (Saisana M. et al., 2005). Saisana et al: (2005) clarifies the uncertainties in their study through the Technology Achievement Index created by the United Nations:

- alternative methods of normalization for the sub-indicator values,
- alternative weighting methods (including FA, PCA, BA and the AHP) and finally,
- uncertainty in the weights of the sub-indicators.

A discrete uncertain factor, which can take integer values between 1 and 3, is used for the aggregation system and similarly for the weighting scheme. Other trigger factors are generated to select those indicators to be omitted, the editing scheme, the organization of the scheme and so on, until a full set of input variables is available to compute $Rank(CI_c)$. Selection and ranking indexes are made based on five different input factors.

Table 4.3: Monte Carlo Approach for Uncertainty Analysis

X₁ Estimation of missing data - Use bivariate correlation to impute missing data. - Assign zero to missing datum	X₂ Normalization - Min-Max - Standardization - None
X₃ Excluded individual indicator $X_3=0$ (All indicators are used) $X_3=1$ $X_3=Q$ (Q indicators are excluded)	X₄ Aggregation Method -Linear -Geometric -NCMC
X₅ Weighting Method -BAP -AHP -BOD	

Source: Author's own illustration (based on OECD, 2005).

Various procedures, including straightforward random sampling, stratified sampling, quasi-random sampling, and others, can be employed to generate samples. The probability distribution function of the output Y is determined by the sequence of Y^l . The variance and higher order moments of this pdf can be estimated with an arbitrary level of precision that is proportional to the magnitude of the simulation N (OECD, 2008).

Saltelli et al. (2004) and Saltelli et al. (2008) deeply investigate the sensitivity analysis methods that can be applied to models in their studies. Elementary effects, variance-based and metamodeling methods are explained in full detail. However, in this thesis, the most commonly applied method, variance-based model analysis, is emphasized.

Sensitivity analysis using variance-based techniques are model-free, to calculate a variance-based sensitivity measure for a specific input factor X_i , begin by calculating the fractional contribution to the model output variance, *which* is the variance of Y_i . Y can be either a country's rank $Rank(CI_C)$ or the overall shift in a country's ranking with respect to a reference ranking $\overline{R}_S$, which is a result of the uncertainty in X_i (OECD, 2005):

$$V_i = V_{X_i} \left(E_{X_{-i}}(Y|X_i) \right) \quad (43)$$

Fix factor X_i , e.g. to a specific value x_i^* in its range, and compute the mean of the output Y averaging over all factors.

4.2.9. Back to the Details

The “Back to details” phase of the composite indicator development process is typically designed to evaluate the reliability and validity of the indicators. During this phase, the weighting and normalization methods are scrutinized for their appropriateness, and the area represented by each component is thoroughly analyzed. Furthermore, the indicators' precision is assessed through a variety of sensitivity analyses. This phase also involves the restructuring of the model or the revision of components as needed, with the objective of enhancing the final model's reliability in accordance with user requirements.

The most commonly applied methods are “path analysis” and “Bayesian networks”. Path analysis is a statistical method that examines direct and indirect relationships between variables using linear regression techniques. This analysis focuses on measuring the effects of each variable on others in causal models, in direct (correlated) and indirect (via mediators) ways. Path analysis is visualized with diagrams to model complex relationships and evaluate the strength of each effect path. It is widely used in social sciences and psychology and is a sub-branch of structural equation modeling.

4.2.10. Visualization of the Results

In the last stage, all applied methods and obtained results are systematically conveyed to the reader.

4.3. Methodology

In this part of the study, the multidimensionality of the characteristics of Muğla districts is reduced to three basic branches in the light of available data. Environmental, cultural and infrastructural scores are attributed to each year of each district. Thus, the comparison of the districts with each other and their changes over time can be interpreted in the light of these composite indicator values. The main point we want to reach in this section is to analyze the changes in environmental, historical and infrastructural assets of the districts by assigning composite indicator values to the districts of Muğla according to their characteristics. In this context, the general process in the construction of the composite indicator is shown in the figure below:

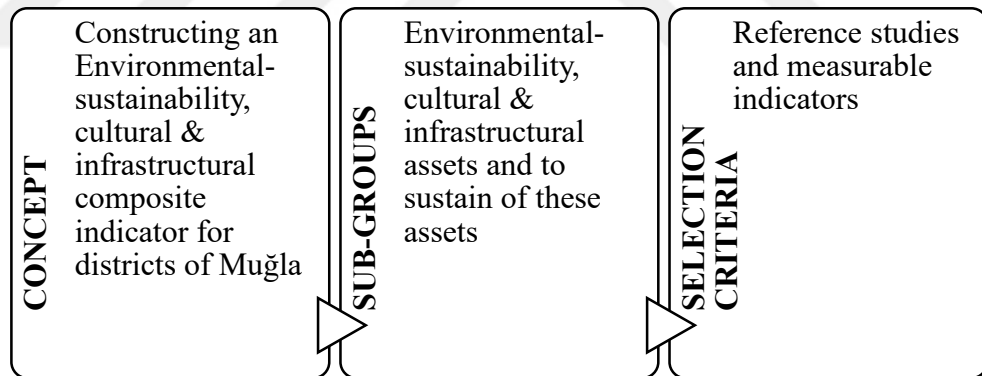


Figure 4.1: The Flow of Designing Our Indicators

Source: Author's own illustration

Each district will have 3 different index scores for each observation year. First, the scope of the objectives and indicators is defined. This study has three main objectives:

- Ease of planning and management: Since a comprehensive situation analysis is carried out, information about the general situation of the district can be

obtained. Policy makers can obtain information about the district's harmony with nature, historical heritage and infrastructure and development level, while providing the opportunity to make comparative analysis.

- Public information and participation: While the public is informed about what the district has and does not have in terms of environment, culture and infrastructure, they can rationalize their expectations from local and general governments.
- Investment and funding: Prioritization of investments is ensured based on what districts have and do not have. Applications for needed funding and support are justified more scientifically using these scores.

Table 4.4: Travel & Tourism Competitiveness Index Framework

Enabling Environment	Travel & Tourism Policy and Enabling Conditions	Infrastructure	Travel & Tourism Demand Drivers	Travel & Tourism Sustainability
Business Environment	Prioritization of Travel and Tourism	Ground and Port Infrastructure	Natural Resources	Environmental Sustainability
Safety and Security	International Openness	Air Transport Infrastructure	Cultural Resources	Socioeconomic Resilience and Conditions
Health and Hygiene	Price Competitiveness	Tourist Service Infrastructure	Non-Leisure Resources	Travel and Tourism Demand Pressure and Impact
Human Resources and Labor Market ICT Readiness				

Source: (World Economic Forum, 2021:8)

While some of the data used in scoring the rows in the 5 subindexes in the framework above are collected with the Executive Opinion Survey method, the other part is obtained as hard data (non-survey) from different sources. It is generally normalized with the min-max method.

Table 4.5: Environmental Performance Index Framework

Climate	Environmental Health				Ecosystem Vitaliy					
Climate Change Mitigation	Air Quality	Waste Management	Water & Sanitation	Heavy Metals	Biodiversity & Habitat	Ecosystem Services	Fisheries	Agriculture	Acid Rain	Water Resources
CO ₂ Growth Rate	PM _{2.5}	Controlled Solid Waste	Unsafe Sanitation	Lead Exposure	Land Biome Protection (National)	Tree Cover Loss	Fish Stock Status	Sustainable Nitrogen Use	SO ₂ Emissions	Wastewater Treatment
CH ₄ Growth Rate	Household Solid Fuels	Recycling	Unsafe Drinking Water		Land Biome Protection (Global)	Wetland Loss	Marine Trophic Index	Sustainable Pesticide Use	NO _x Emissions	
N ₂ O Growth Rate	Ozone	Ocean Plastics			Marine Protected Areas	Grassland Loss	Trawling and Dredging			
F-Gas Growth Rate	Nitrogen Oxides				Protected Areas					
Black Carbon Growth Rate	Sulfur Dioxide				Rep. Index Biodiversity					
Projected	Carbon				Habitat Index Species					

2050 Emission s CO ₂ from Land Cover GHG Intensity GHG per Capita	Monoxid e Volatile Organics	Protection Index Species Habitat Index
--	--	--

Source: (Wolf et al., 2022:4)

The table includes 3 policy objectives, 11 issue categories and 40 indicators. It can be said that it is a very insightful study in order to understand the metrics of the environmental performance concept and to evaluate the environmental sustainability characteristics of a region with numbers. The data used in the composite indicators created in this section of the thesis was quite inspiring.

In the next stage, it is attempted to reach accessible, reliable, relevant and policy-oriented data. Data selection and scaling stage before normalization are very important for the reliability of the composite indicator.

Scale transformation is performed before the normalization process. By converting variables to percentages, the effect of outlier observations on the model is reduced and helps the variables to contribute equally to the model. In normalization, the standardization (z-score) method is used. There are two main reasons for choosing this method. Since a z-score is attributed to each observation according to the arithmetic mean and standard deviation of the sample, the comparability of the variables with each other increases. James et al. (2013) state that centering the data around the arithmetic mean of 0 and expressing the distribution over the standard deviation is useful for linear methods such as regression and PCA.

The principal component factor analysis method is used in the weighting and aggregation stages. PCFA is actually the process of reducing a high-dimensional data set to a lower-dimensional factor space. PCFA initially tries to find factor loadings by using the correlation matrix to reveal the common variance of variables in a data matrix. The stages are as follows:

$$\begin{matrix} \mathbf{X} \\ (p \times m) \end{matrix} = \begin{bmatrix} x_{11} & \cdots & x_{1m} \\ \vdots & \ddots & \vdots \\ x_{p1} & \cdots & x_{pm} \end{bmatrix} \quad (44)$$

In the $\mathbf{X}$ data matrix, p represents the number of samples and m represents the number of variables. Then the data matrix is standardized. In the next step, the correlation matrix $\mathbf{R}$ is calculated. The correlation matrix is symmetric, $m \times m$.

Then, the eigenvalues (λ) and eigenvectors (v) of the correlation matrix are calculated:

$$\mathbf{R}.v_j = \lambda_j.v_j \quad (45)$$

Here λ_j is the j -th eigenvalue and v_j is the eigenvector corresponding to the j -th eigenvalue. The eigenvalues and eigenvectors obtained from the correlation matrix are used to reveal the factor structures in the data. The factor loadings matrix $\mathbf{L}$ shows the weight or contribution of each variable in the factors and can be calculated by the following formula:

$$\mathbf{L} = \mathbf{V} \cdot \sqrt{\mathbf{\Lambda}} \quad (46)$$

In this equation, $\mathbf{V}$ is the matrix consisting of eigenvectors of matrix $\mathbf{R}$. $\mathbf{\Lambda}$ is the diagonal matrix of eigenvalues and shows the amount of variance that each factor can explain.

Factor scores are calculated for each observation in the data. The factor score indicates where an observation is located in the factor structure. The factor score matrix, denoted by $\mathbf{F}$, describes the relationship between the standardized data matrix $\mathbf{Z}$ and the factor loadings $\mathbf{L}$:

$$\mathbf{F} = \mathbf{Z} \cdot \mathbf{L} \quad (47)$$

Here $\mathbf{F}$ shows the position of each observation on the factors. In order to make the factor loadings more interpretable, rotation can be made to the $\mathbf{L}$ matrix. Rotation allows the factor loadings to show a more meaningful distribution without changing the structure of the matrix. “Varimax” and “promax” rotations are the most commonly used methods and make the factors more interpretable by making the factor loadings more apparent.

As uncertainty analysis, two different dynamic regression models were estimated with index scores obtained with the equal weighting method, normalized with the min-max method, and dependent variables being the number of foreign visitors and overnight stays. None of the indices give significant results.

4.4. Data and Sample

The data selection process for constructing the indicators involves the utilization of two influential studies: “Environmental Performance Index” produced

regularly by the Yale Center for Environmental Law & Policy, and “Travel & Tourism Development Index” developed by the World Economic Forum. In order to increase the reliability and depth of the composite indicators, I tried to make the dataset quite broad. In this context, I reached the data that was used or ignored in the two studies mentioned. However, the lack of district-level data and the difficult and costly process of sharing the existing data cause me not to be able to access all the data I want.

The dataset comprises a panel structure, where the cross-sectional dimension is represented by the districts of Muğla, and the time dimension spans annual data from 2014 to 2021. This framework enables the analysis of spatial and temporal variations within Muğla’s districts, thereby enabling longitudinal and cross-sectional studies over the designated timeframe. Transformation is performed before standardization in all variables where there are outlier observations and where scale transformation will bring the rates closer to the center.

The following table displays the applied transformation and standardization (z-score) operations:

Table 4.6: The Specifications of Variables

Variable description	Data source	Preliminary treatments and standardization of the raw data	Acronym
National Parks Area	Ministry of Environment, Urbanization and Climate Change, 2023.	$Z\ score = \frac{\left[\frac{National\ parks\ area_{i,t}}{Total\ area_i} - \left(\frac{National\ parks\ area}{Total\ area} \right) \right]}{\sigma}$	NM
Monumental Trees	Ministry of Environment, Urbanization and Climate Change, 2023.	$Z\ score = \frac{[Number\ of\ monumental\ trees_{i,t} - (Number\ of\ monumental\ trees)]}{\sigma}$	MT
Natural Monuments	Ministry of Environment, Urbanization and Climate Change, 2023.	$Z\ score = \frac{[Number\ of\ natural\ monuments_{i,t} - (Number\ of\ natural\ monuments)]}{\sigma}$	NP
Carbon Emissions Inventory	TURKSTAT, 2023. Ministry of Energy and Natural Resources Report, 2020.	$Z\ score = \frac{[(Consumed\ electricity_{i,t}(kwh) \times 0,481tCO_2^1) + (No.of\ arrivals_{i,t} \times Av.tCO_2\ footprint\ of\ a\ tourist^2)] - \bar{X}}{\sigma}$	CO2
Purified Water	Muğla Water and Sewerage Administration	$Z\ score = \frac{\left[\frac{Purified\ water_{i,t}}{Population_{i,t}} - \left(\frac{Purified\ water}{Population} \right) \right]}{\sigma}$	PW

Natural Site Area	General Directorate Report, 2022. Ministry of Environment, Urbanization and Climate Change, 2023 https://says.csb.gov.tr/ home .	$Z\ score = \frac{\left[\frac{Natural\ sites\ area_{i,t}}{Total\ area_i} - \left(\frac{Natural\ sites\ area}{Total\ area} \right) \right]}{\sigma}$	NSA
Termic Power Plant Emissions	TURKSTAT, 2023. Ministry of Energy and Natural Resources Report, 2020.	$Z\ score = \frac{[Energy\ produced\ in\ thermal\ power\ plant\ (KWh) \times 0,37lbs\ CO2e_{i,t} - \bar{X}]}{\sigma}$	PPE2
Sheep and cattle livestock	Ministry of Agriculture and Livestock, 2023	$z\ score = \frac{\left[\frac{Number\ of\ sheep\ and\ cattle_{i,t}}{Total\ area_i} - \left(\frac{Number\ of\ sheep\ and\ cattle}{Total\ area} \right) \right]}{\sigma}$	GL
Agricultural Landscape	Ministry of Agriculture and Livestock, 2023	$z\ score = \frac{\left[\frac{Agricultural\ landscape_{i,t}}{Total\ area_i} - \left(\frac{Agricultural\ landscape}{Total\ area} \right) \right]}{\sigma}$	AL
Terrestrial Biome Protection Area	Ministry of Environment, Urbanization and Climate Change, 2023.	$Z\ score = \frac{\left[\frac{Terrestrial\ biome\ protection\ area_{i,t}}{Total\ area_i} - \left(\frac{Terrestrial\ biome\ protection\ area}{Total\ area} \right) \right]}{\sigma}$	TBP

Marine Biome Protection Area	Ministry of Environment, Urbanization and Climate Change, 2023.	$Z\ score = \frac{\left[\frac{Marine\ biome\ protection\ area_{i,t}}{Total\ area_i} - \left(\frac{Marine\ biome\ protection\ area}{Total\ area} \right) \right]}{\sigma}$	MBP
Blue Flag Beaches	Culture and Tourism Ministry, 2023.	$Z\ score = \frac{\left[\frac{Number\ of\ blue\ flag\ beaches_{i,t}}{Total\ beaches_i} - \left(\frac{Number\ of\ blue\ flag\ beaches}{Total\ beaches} \right) \right]}{\sigma}$	BF
Groundwater Reserve	Muğla Water and Sewerage Administration General Directorate Report, 2022.	$Z\ score = \frac{\left[\frac{Ground\ water\ reserve_{i,t}}{Population_{i,t}} - \left(\frac{Ground\ water\ reserve}{Population_t} \right) \right]}{\sigma}$	GR
Tree Cover Area	https://www.globalforestwatch.org/	$Z\ score = \frac{\left[\frac{Tree\ cover\ area_{i,t}}{Total\ area_i} - \left(\frac{Tree\ cover\ area}{Total\ area} \right) \right]}{\sigma}$	TC
New Construction Permit	TURKSTAT, 2023.	$Z\ score = \frac{\left[\frac{Licensed\ construction\ projects\ area_{i,t}}{Total\ area_i} - \left(\frac{Licensed\ construction\ projects\ area}{Total\ area} \right) \right]}{\sigma}$	NCP
Endemic Biodiversity Inventory	Muğla Provincial Directorate of Agriculture and Forestry Report, 2022.	$Z\ score = \frac{\left[\frac{Length\ of\ road_{i,t}}{Total\ area_i} - \left(\frac{Length\ of\ road}{Total\ area} \right) \right]}{\sigma}$	EBI

Renewable Energy	www.enerjiatlas.com		$Z \text{ score} = \frac{\left[\frac{\text{Produced renewable electrical energy (MW)}_{i,t}}{\text{Total consumed electrical energy (MW)}_{i,t}} - \bar{X} \right]}{\sigma}$	RE2
UNESCO Heritage	UNESCO Heritage List, 2022.		$z \text{ score} = \frac{\left[\frac{\text{No. of places on the UNESCO heritage list}_{i,t}}{\text{Total no. of places on the UNESCO heritage list in the province}} - \bar{X} \right]}{\sigma}$	UH
Ancient Cities and Ruins	Muğla Provincial Directorate of Culture and Tourism, 2023.		$Z \text{ score} = \frac{\left[\frac{\text{Discovered ruins and ancient sites}_{x,t}}{\text{Discovered total ruins and ancient sites in the province}} - \bar{X} \right]}{\sigma}$	AC
Archeological Site Areas	Muğla Metropolitan Municipality, 2022.		$Z \text{ score} = \frac{\left[\frac{\text{Archeological site area}_{i,t}}{\text{Total area}_i} - \left(\frac{\text{Archeological site area}}{\text{Total area}} \right) \right]}{\sigma}$	ASA
Food Culture Measure			$Z \text{ score} = \frac{[(\text{No. of gastronomy festivals} + \text{No. of geographically indicated food} + \text{No. of Michelin star restaurants}) - \bar{X}]}{\sigma}$	GAS

Maritime Services Enterprises	Muğla Provincial Directorate of Culture and Tourism, 2022.	$Z\ score = \frac{[Total\ boat\ capacity\ of\ mar.\ serv.\ ent._{i,t} - \overline{Total\ boat\ capacity\ of\ mar.\ serv.\ ent.}]}{\sigma}$	MC
Road Inventory	Muğla Metropolitan Municipality, 2023.	$Z\ score = \frac{[\frac{Length\ of\ road_{i,t}}{Total\ area_i} - (\frac{Length\ of\ road}{Total\ area})]}{\sigma}$	PL
Airport Measure	Anonymous Source, 2023.	$Z\ score = \frac{[(Total\ parking\ plane\ capacity \times Proximity\ of\ the\ airport\ to\ the\ town(km)) - \bar{X}]}{\sigma}$	AIC
Sewer Length	Muğla Water and Sewerage Administration General Directorate Report, 2022.	$Z\ score = \frac{[\frac{Sewer\ length_{i,t}}{Total\ area_i} - (\frac{Sewer\ length}{Total\ area})]}{\sigma}$	DRA

1: The coefficient is the electricity consumption point emission factor calculated for Turkey in 2020 (see Republic of Türkiye Ministry Energy and Natural Resources, 2022).

2: In Barcelona, a Mediterranean country destination, the carbon footprint created by each tourist is used as an emission coefficient (see Rico et al.,2019).

4.5. Empirical Results

Since there are 3 different composite indicators, the empirical results are presented under separate subheadings.

4.5.1. Environmental Composite Indicator

In factor analysis ‘nature of monuments, national parks, monumental trees, CO₂ inventory, purified water, natural site areas, thermal power plant emissions, sheep and cattle livestock, agricultural landscape, terrestrial biome protection area, marine biome protection area, blue flag beaches, groundwater reservoir, tree cover area, new construction area, endemic biodiversity inventory and renewable energy’ variables are employed. Principal-component factor method is used to analyze the correlation matrix. In this method, we assume that the communalities are 1. Prior to analyzing the empirical results of the model, the reliability of the results is tested using determinant of the correlation matrix and Bartlett’s Test of Sphericity (1951) techniques. Interrelation between variables is confirmed if correlation matrix determinant is less than 0,00001. Bartlett’s Test emphasizes whether the correlation matrix is a unit matrix. A unit matrix indicates that there is no significant correlation between the variables. *If $p < 0,05$* , it means that there is a significant correlation between the variables. (1951). A Cronbach's alpha coefficient equal to or greater than 0,7 is generally regarded as satisfactory (see Nunnally & Bernstein, 1994; Cortina, 1993). DeVellis (2016) and Hair et al. (2010) state that a threshold of 0,6 is also acceptable in the early stages of scale development and in exploratory studies. Our environmental-sustainability variables set’s Cronbach’s alpha value is 0,7632.

The next table illustrates our environmental variables set’s preliminary tests for applying factor analysis:

Table 4.7: Preliminary Tests of Factor Analysis

Determinant of the Correlation Matrix	
Det	0,000
Cronbach's Coefficient Alpha	
Test scale	Mean
Scale reliability coefficient	0,7632
Bartlett Test of Sphericity	
H ₀	Variables are not intercorrelated
p-value	0,000

After testing the suitability of the data set for factor analysis, standard practice begins by first selecting factors with eigenvalues greater than 1 (Kaiser, 1960).

The individual contribution of each factor to the cumulative variance must be greater than 0,05 and the cumulative variance explained by five factors must be greater than 0,7.

Table 4.8: Principal-Component Factor Analysis Method of Environmental-Sustainability Index

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	4,617	0,628	0,272	0,272
Factor 2	3,989	1,383	0,235	0,506
Factor 3	2,606	1,071	0,153	0,659
Factor 4	1,535	0,331	0,09	0,75
Factor 5	1,204	0,247	0,071	0,806
Factor 6	0,957	0,113	0,056	0,877
Factor 7	0,844	0,355	0,05	0,927
Factor 8	0,489	0,221	0,029	0,955
Factor 9	0,268	0,088	0,016	0,971
Factor 10	0,18	0,068	0,011	0,982

LR test: independent vs. saturated: $\chi^2(136) = 2595.48$ Prob> $\chi^2 = 0.0000$

It is very difficult to interpret the loadings of the variables from unrotated pattern matrix, because the variances of the factors cannot be seen. Therefore, unity sum equality cannot be established. It is also necessary to rotate the component factor

matrix. Afterwards, we rotate the matrix so that it has a simpler structure and can be interpreted easily and reliably (Thurstone, 1947; Cattell, 1978). Varimax or promax methods can be applied. In the study, we perform oblique promax rotation because the variables are highly interdependent. The next table shows 5-dimensional factor solution with promax rotation:

Table 4.9: Factor Analysis/Correlation and Weights of Environmental-Sustainability Unobserved Factors

Factor	Variance	Proportion	Weight Assigned
Factor 1	3,957	0,232	0,257818608
Factor 2	3,691	0,217	0,24048736
Factor 3	3,185	0,187	0,207518895
Factor 4	2,764	0,162	0,180088611
Factor 5	1,751	0,103	0,114086526
Total	15,348	0,901	1
LR test: independent vs. saturated: $\chi^2(136) = 2588.70$ Prob> $\chi^2 = 0.000$			

The calculation formula for the proportion of the variance of the variables in unobservable factors is as follows:

$$\text{Proportion of variance explained by the } j^{\text{th}} \text{ factor} = \frac{\text{Variance explained by factor } j^{\text{th}}}{\text{Total variance explained by 5 factor}} \quad (48)$$

Factor 1 explains 0,232 of total variance in the observed variables, and factor 2 explains 0,217. The proportion explained by the other 3 unobserved factors appears in the next table. However, it would be correct to say that factor 1 is the unobserved variable that explains the most variance.

The table below shows the variance of the observed variables that is explained by unobserved factors, as well as the uniqueness of each observed variable. “[0,4]” is the lower threshold for factor loading of variables (Stevens, 2009). All coefficients in the study are greater than |0,4|. It can be seen that the coefficients are between -0,69 and 0,45. In Factor 1, the CO2 emission inventory variable has a negative value. In

other words, it has a negative relationship with other variables in factor 1. That is, while the variables nature of monuments, national parks, monumental trees, purified water, natural site areas increase in the districts, CO2 decreases and vice versa. In factor 2, it is seen that the thermal power plant emission inventory variable has a negative relationship with the sheep and cattle livestock and agricultural landscape variables.

Table 4.10: Rotated Factor Loadings (Pattern Matrix) and Unique Variances of Environmental Variables

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Uniqueness
NM	0,88	-0,202	0,048	-0,05	0,168	0,066
MT	0,875	0,354	-0,156	-0,15	-0,118	0,132
NP	0,859	0,14	0,194	0,2	0,115	0,205
CO2	-0,693	0,204	0,218	0,539	-0,069	0,118
PW	0,554	0,199	-0,291	-0,376	0,22	0,268
NSA	0,45	-0,038	0,404	0,025	-0,462	0,383
PPE2	-0,128	-0,928	0,022	-0,257	-0,033	0,166
GL	0,145	0,907	-0,145	0,186	0,013	0,126
AL	-0,206	0,755	-0,193	-0,17	-0,029	0,143
TBP	-0,171	-0,094	0,942	-0,089	0,177	0,035
MBP	0,133	-0,152	0,771	0,215	-0,092	0,188
BF	0,32	-0,132	0,603	-0,596	0,083	0,079
GR	-0,365	0,344	0,598	-0,45	0,319	0,103
TC	-0,003	-0,63	-0,225	0,628	0,312	0,143
NCP	-0,092	0,219	0,057	0,944	0,048	0,141
EBI	0,287	-0,182	0,274	0,023	0,775	0,18
RE2	-0,288	-0,236	-0,023	-0,151	-0,553	0,575

During the weighting stage, the loadings of the variables are initially transformed into normalized squared factors. By squaring the factor loading of the

variables, negative values are transformed into a range between 0 and 1. Subsequently, the normalized values are computed by considering the variance explained by the j^{th} factor.

$$\text{Normalized squared factor loading of variable } i = \frac{(\text{Factor loading of variable } i)^2}{\text{Variance explained by factor } j^{th}} \quad (49)$$

The formula shown above is used to create the normalized squared factor loading matrix of the variables:

Table 4.11: Normalized Squared Factor Loadings of Variables of Environmental Composite Indicator

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
NM	0,195704				
MT	0,193486				
NP	0,186475				
CO2	0,121367				
PW	0,077563				
NSA	0,051175				
PPE2		0,23332			
GL		0,22288			
AL		0,154436			
TBP			0,278607		
MBP			0,186638		
BF			0,114163		
GR			0,112278		
TC				0,142686	
NCP				0,322408	
EBI					0,343018
RE2					0,174648

Now we have reached the stage of calculating the weights of the factors in the indicator and the variables within these factors, and determining the scores. The formula for the weight of factors is as follows:

$$\text{Weight of the variable } i = F_j * L_i \quad (50)$$

The weights of the variables are calculated using the previous formula. F_j is the factor weight of the j^{th} factor, is the normalized squared factor of loading of variable i . The fourth column of the table below contains the scaled version of the weights in unit.

Table 4.12: Weights of Environmental Composite Indicators

Factors	Indicators	Weights	Weights scaled to unity
1	NM	0,050456	0,078091
	MT	0,049884	0,077206
	NP	0,048077	0,074408
	CO2	0,031291	0,048429
	PW	0,019997	0,03095
	NSA	0,05611	0,02042
2	PPE2	0,0536	0,086842
	GL	0,03714	0,082956
	AL	0,025696	0,057482
3	TBP	0,057816	0,089482
	MBP	0,038731	0,059944
	BF	0,023691	0,036667
	GR	0,0233	0,036061
4	TC	0,058062	0,03977
	NCP	0,039134	0,089863
5	EBI	0,019925	0,060568
	RE2	0,013194	0,030838

When looking at the table thermal plant emission inventory, ‘terrestrial biome protection, sheep and cattle livestock, constructed area and nature monuments’ variables are the most valuable ones for the environmental-sustainability index score. Natural site area, quantity of purified water, renewable energy the weight of the variables in the index is relatively low.

Ultimately, the environmental index scores of the districts are calculated using the following formula:

$$\text{Index score of } j^{\text{th}} \text{ district, } t^{\text{th}} \text{ time} = \sum_{i=A}^Y (w_i \cdot X_{ij,t}) \quad (51)$$

Where w is weight of indicators, X is experiment of each measure of data matrix, j is each district, i is each indicator and t is the time range.

Table 4.13: Environmental Composite Indicator Scores

	Bodrum	Dalaman	Datça	Fethiye	Kavaklıdere	Köyceğiz	Marmaris	Menteşe	Milas	Ortaca	Seydikemer	Ula	Yatağan
2014	44,56	41,12	54,48	52,45	40,37	44,82	56,60	43,40	46,06	51,87	49,36	53,92	45,98
2015	44,87	40,90	54,12	53,39	39,17	44,58	60,91	43,88	48,72	52,63	49,41	53,74	45,54
2016	44,87	42,41	54,42	54,28	40,69	44,71	60,11	44,99	47,01	52,79	49,57	53,38	43,96
2017	44,20	42,08	53,80	53,08	40,69	44,47	58,30	43,73	47,06	53,18	49,52	53,18	43,46
2018	44,92	41,84	54,77	52,77	39,54	44,46	60,70	44,75	48,75	52,21	50,20	54,04	43,33
2019	45,02	42,94	55,81	53,25	39,87	44,47	61,62	43,36	49,02	53,56	50,38	55,57	44,48
2020	48,15	41,96	55,34	54,96	40,39	44,55	62,85	46,92	50,23	54,77	50,70	56,25	45,07
2021	50,75	40,46	53,89	52,69	39,26	44,14	59,32	45,66	48,04	53,41	48,40	54,89	43,93

When looking at the table, it can be observed that Marmaris has a higher environmental sustainability score compared to other districts. Considering its extensive pine forests, high water quality along its coastlines, vast national parks, and protected terrestrial and marine biomes, it is not surprising that Marmaris has a higher score than other districts. Furthermore, it showcases its ecological superiority with a comprehensive inventory of extensive indigenous biodiversity.

Datça stands after Marmaris. The entire district is designated as a special environmental protection zone. The terrestrial and marine biome protection area is significantly large. Furthermore, the low calculated CO₂ emissions in Datça, the high water quality of seas, and the high amount of per capita electricity produced from renewable energy contribute to the increase in its score.

It appears that the score values of Kavaklıdere, Dalaman, Yatağan, Menteşe, and Bodrum are comparatively low. When evaluating numerical values, it is important to remember that measures move with variances and covariances, thus indicating the relative nature of the measures. It is worth noting that most of the districts with low scores do not have a coastline and have an ecological disadvantage in terms of seawater quality parameters. The number of natural protected areas, national parks, terrestrial and marine biome conservation areas in these districts is extremely limited. Furthermore, the amount of individually treated drinking water in the districts of Kavaklıdere, Yatağan, and Menteşe is significantly low. Bodrum is the district of Muğla province with the highest value per square meter in terms of licensed construction area between 2014-2021. The exposure of Bodrum to mass tourism and its dense population contribute to the increase in calculated CO₂. The existence of the thermal power plant and the CO₂ emissions it releases are another important reason for Yatağan's low index value. The fact that there are no terrestrial biome protection areas, no national parks, or maritime protected areas in Dalaman, Kavaklıdere and Menteşe causes the index scores of the regions to be low.

4.5.2. Cultural Composite Indicator

Although the name of the index is “cultural”, it also includes historical and gastronomic elements. Our cultural index consists of four variables. These are UNESCO heritage sites, archaeological site areas, historical monuments, castles, ruins, and ancient sites, as well as food culture heritage. Although the index aims to incorporate ethnic patterns, traditional music and dance, clothing, and artwork, it does not include any numerical data regarding these variables.

Table 4.14: Preliminary Tests of Factor Analysis

Cronbach's Coefficient Alpha	
Test scale	Mean
Scale reliability coefficient	0,4816
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	
KMO value	0,525
Bartlett Test of Sphericity	
H ₀	Variables are not intercorrelated
p-value	0,000

Cronbach's reliability coefficient is sensitive to sample size. Small samples can make it difficult to measure variance accurately, which can make alpha values misleadingly high or low. This becomes especially evident when the number of items is small. Four different variables are used to create the cultural composite indicator. However, since the number of archaeological sites and historical sites does not show continuous changes, there are repeated observations. This causes Cronbach's Coefficient Alpha to be lower than 0,6. However, the other two preliminary test results show that it is a suitable data set for applying factor analysis.

Table 4.15: Total Variance Explained by the Factors with Cultural Variables

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	1,781	0,458	0,445	0,445
Factor 2	1,323	0,806	0,331	0,776
Factor 3	0,517	0,138	0,129	0,905
Factor 4	0,379	.	0,095	1
LR test: independent vs. saturated: $\chi^2(6)=78.69$			Prob> $\chi^2 = 0.0000$	

As can be observed, the eigenvalues of the two factors are greater than 1. The index has two subcategories. These two factors collectively explain 0,776 of the cumulative covariance variations of the variables.

When examining the factor loadings, it can be observed that all variables have a high value of more than 0,4. Approximately 0,2 of the variances of each variable is unique and cannot be explained by the variance of other variables.

Table 4.16: Rotated factor loadings (pattern matrix) and unique variances of Cultural Index

Variable	Factor1	Factor2	Uniqueness
UH	0,343	0,821	0,212
ASA	0,362	-0,805	0,217
AC	0,862	0,024	0,256
GAS	0,888	-0,014	0,211

It may be noticed the sign of the archaeological site area variable is negative. This situation indicates that in districts where the UNESCO heritage variable is high, the percentage of archaeological sites is low or vice versa.

The weights of the variables are quite close to each other. It appears that the weight of the culinary cultural heritage variable is higher than the others in the index score. However, the weights of the other variables are also close to it.

Table 4.17: Weights of Indicators of Cultural Index

Factors	Indicators	Weights	Weights Scaled to Unity
1	AC	0,238828	0,260047
	GAS	0,254041	0,276612
2	UH	0,221405	0,241076
	ASA	0,204129	0,222265

The following table displays the cultural index scores of districts between the years 2014 and 2021.

Table 4.18: Cultural Composite Indicator Scores

	Bodrum	Dalaman	Datça	Fethiye	Kavaklıdere	Köyceğiz	Marmaris	Menteşe	Milas	Ortaca	Seydikemer	Ula	Yatağan
2014	74,48	39,90	38,25	70,55	36,03	31,75	44,22	24,47	51,26	32,08	40,27	22,84	29,60
2015	74,48	39,90	38,25	70,55	36,03	31,75	44,22	24,47	56,63	32,08	40,27	22,84	29,60
2016	84,30	39,90	38,25	70,55	36,03	31,75	44,22	24,47	62,28	32,08	40,27	22,84	29,60
2017	85,61	39,90	38,25	75,09	36,03	31,75	44,22	24,47	62,28	32,08	40,27	22,84	29,60
2018	85,61	39,90	43,62	75,09	36,03	31,75	44,22	40,03	66,82	32,08	40,27	22,84	29,60
2019	86,08	39,90	43,62	75,09	36,03	31,75	49,59	42,82	69,61	32,08	40,27	22,84	29,60
2020	86,21	39,90	43,62	75,09	41,39	31,75	49,59	42,82	69,61	32,08	45,64	22,84	29,60
2021	86,23	39,90	43,62	79,19	41,39	31,75	49,59	42,82	69,61	32,08	45,64	22,84	29,60

Bodrum ranks first in terms of its cultural index score. The district is home to ancient cities, archaeological sites, and a grandiose castle, making it the top destination in terms of historical inventory. The fact that the prehistoric Carian kingdom was established in Bodrum means that there are many archaeological sites in the district. The inclusion of Bodrum Castle in the UNESCO Heritage List in 2017 is another factor that increases the index score. Furthermore, it hosts five distinct gastronomy festivals. The majority of these festivals are traditional. Bodrum is the only district in which there are two Michelin-starred restaurants, making it the sole district with restaurants holding this prestigious title.

When all of these conditions converge, it is unavoidable for Bodrum to be the outlier in the sample. Subsequently, Fethiye Menteşe and Ortaca follow. Xanthos-Letoon has been included on the UNESCO Heritage List, which is a permanent status. Xanthos served as the political capital of the Lycian civilization throughout ancient times, while Letoon functioned as its religious hub. The presence of the Lycian culture in Fethiye results in a plethora of archaeological remains and historical sites in the area. Menteşe boasts a wealth of gastronomic offerings. It can be observed that Seydikemer, Marmaris, Yatağan and Ula have low cultural index values. It should be remembered that Ula's architecture with wooden balconies has a good reputation. However, due to the inability to construct a parameter related to architecture, it is not included in the index. Although Seydikemer has regions that are included in the UNESCO World Heritage List, its inventory in other aspects is weak.

4.5.3. Infrastructural Composite Indicator

The infrastructure index consists of variables such as the length of the sewerage network, road inventory, airport capacity, and boat capacity for maritime services. Although the sector appears to be dominated by private entrepreneurs, the investments in the maritime and shipping services sector are really encouraged and supported by government tenders and incentives.

In the table below, a Cronbach's Coefficient Alpha value greater than 0,6 indicates that it is suitable for factor analysis (Nunnally & Bernstein, 1994).

Table 4.19: Preliminary Tests of Factor Analysis

Cronbach's Coefficient Alpha	
Test scale	Mean
Scale reliability coefficient	0,6113
Bartlett Test of Sphericity	
H ₀	Variables are not intercorrelated
p-value	0,000

It is seen that the variance proportion of each factor is more than 0,10. The eigenvalues of the two unobserved variables are greater than 1. These two factors account for 0,815 of total variance.

Table 4.20: Principal-Component Factor Analysis Infrastructural Composite

Indicator				
Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2,137	1,015	0,534	0,534
Factor2	1,122	0,431	0,280	0,815
Factor3	0,691	0,640	0,173	0,987
Factor4	0,051	.	0,013	1,000

Factor 1 encompasses sewer length, airport capacity, and marina operations boat capacity. The road inventory is currently at a factor of 2. The variables have positive indications. Essentially, it is evident that the districts' infrastructure expenditures do not offer any choice or opt-out option. There exists a direct correlation between the capacity of maritime services, airport capacity, and investments in sewage. The required funding has been allocated for the essential infrastructural components.

Table 4.21: Rotated factor loadings (pattern matrix) and unique variances of Infrastructure Index

Variable	Factor1	Factor2	Uniqueness
MC	0,940	-0,264	0,097
AIC	0,547	0,479	0,419
DRA	0,967	0,040	0,056
PL	-0,170	0,912	0,170

The weights of the index variables exhibit a high degree of similarity. Nevertheless, it appears that the airport parameter is the variable that has the most impact on the index score.

Table 4.22: Weights of Indicators of Infrastructure Index

Factors	Indicators	Weights	Weights Scaled to Unity
1	MC	0,238828	0,260047
	AIC	0,254041	0,276612
	DRA	0,221405	0,241076
2	PL	0,204129	0,222265

As expected, it can be observed that Bodrum is significantly leading in terms of score, ranking first. The proximity to the airport, having a proper road (asphalt and gravel) inventory, the density of marine businesses in Göcek, its location on the route to Antalya and other major southern cities contribute to Fethiye's ranking as the second city. Ortaca and Dalaman are the subsequent destinations after Fethiye. It seems that the airport score has a high weight among the variables. Muğla's only international airport is in Dalaman, and its distance to Ortaca is approximately 12 kilometers.

Table 4.23: Infrastructural Composite Indicator Scores

	Bodrum	Dalaman	Datça	Fethiye	Kavaklıdere	Köyceğiz	Marmaris	Menteşe	Milas	Ortaca	Seydikemer	Ula	Yatağan
2014	83,81	50,22	31,99	46,31	30,43	23,79	48,97	33,79	45,99	66,84	33,39	35,38	40,94
2015	83,81	50,22	31,99	47,75	30,43	23,79	48,97	33,84	49,98	66,84	33,67	35,38	40,94
2016	83,80	50,33	32,12	47,84	30,49	23,83	49,02	33,86	49,99	66,99	33,71	35,43	40,98
2017	83,80	53,81	32,23	49,21	30,49	24,97	50,27	33,86	49,99	68,34	33,73	35,43	40,98
2018	83,80	53,97	32,40	50,05	30,49	25,00	50,31	33,89	50,03	68,58	33,73	35,43	41,01
2019	83,81	54,20	32,52	50,17	30,67	25,01	50,33	33,90	50,04	68,71	33,73	38,98	41,02
2020	89,72	56,29	34,32	54,94	35,34	25,43	51,90	36,50	52,10	57,35	34,12	41,32	44,01
2021	89,75	56,50	34,39	57,39	35,35	25,44	51,92	36,55	52,12	57,59	34,12	41,58	44,02

Köyceğiz, Kavaklıdere, Datça, Seydikemer, and Menteşe are ranked at the lowest positions in the infrastructure score. Köyceğiz's limited coastal area, delayed private and public investments compared to other districts, and its focus on agriculture and forestry (namely sweetgum woods and citrus groves) have a negative impact on its infrastructural overall score. The peninsula of Datça is located at a considerable distance from the major economic hubs such as the center of Muğla, Istanbul, and Ankara. The entire district is designated as a special environmental protection zone, which poses legal barriers to the construction of asphalt and concrete infrastructure.

Although a project has been proposed for the southern region of Datça, environmentalists have expressed concerns and advised against its implementation. Datça's poor score is primarily attributed to the absence of the marina, for which it has been vigorously advocating, as well as its considerable distance from the two airports in Muğla. Nevertheless, it is important to note that Datça receives a good score on the Environmental-Sustainability Index due to similar factors. Seydikemer was formerly a constituent part of Fethiye until 2014, however it was subsequently elevated to the status of a district. The most rural area of Muğla is the location where greenhouse agriculture is highly concentrated. Menteşe is, in fact, the district with the longest natural gas pipeline. Unfortunately, the index cannot incorporate this parameter due to the unavailability of the appropriate data.

4.6. Discussion

Muğla is a rich Aegean-Mediterranean destination with all its districts, both with its natural and environmental assets. At the same time, it can be an ideal location for renewable energy production due to its geographical features. Apart from sea-sand-sun tourism, it is also a suitable place for cultural tourism or alternative tourism areas. It is a very advantageous place for agricultural production with its vegetation and climatic variables. However, in order to prove all these hypotheses, it is necessary to evaluate them with numerical methods in order to move the assets to better points. The main purpose of the section is to open a different window to policy makers about the situation of Muğla with the methodology used and district-level data. In fact, theoretical and practical studies on regional development show that the creation of projects starts with the 'strategic context'. Here, the socio-economic and geographical characteristics of the region, natural and human resources are analyzed. The strengths and weaknesses of the region, opportunities and possible threat elements are determined (see OECD, 2024; UNDP, 2021). Therefore, the assets and shortcomings of the districts are made concrete with the created indices.

Another objective of the section is to analyze the relationships between the tourism output and the created indices by converting them into variables of the econometric model in the next section.

The empirical subsection of this chapter generally follows the methodology of OECD (2005). Although there are many disadvantages and risks of creating an index, such as reducing the number of data and presenting misleading results when the correct variables are not used, the results are not very surprising. The natural environmental index scores of Marmaris, Datça and Ula are higher than the other districts. The 3 districts have one thing in common. Both the land surface area and the large part of the sea waters of the 3 districts are within the “special environmental protection” zone. The districts that attract the most tourists and have the highest real estate unit (m2) prices after Bodrum are the ones with high environmental scores. The causality relationship is not the subject of this study, but undoubtedly protecting the environmental quality of the region, preventing concreting and preserving the appeal of the city. Due to the high demand and low supply situation, living in these destinations becomes expensive. The rural population settled in Marmaris also has some disadvantages such as not being able to own a house and a job in a geography where they were born and raised. Tourism practices in Datça and Ula are different from Bodrum, Marmaris and Fethiye. There is a high presence of small accommodation businesses rather than mass tourism and all-inclusive hotels. These situations may be among the reasons for the high environmental composite indicator scores.

When we look at the cultural index, it is seen that Bodrum and Fethiye have much higher scores than other districts. The fact that Bodrum was the largest city of the Carian prehistoric civilization, that it is rich in archaeological sites and historical areas, that Bodrum Castle is on the UNESCO heritage list, that the Halicarnassus Mausoleum exists, and that many local food festivals take place in Bodrum show that the result is normal. Some of the ancient cities of Letoon and Xanthos, which are on the UNESCO permanent heritage list, are located within the borders of Fethiye, and

these ancient cities are the capital and religious center of the Lycians, making Fethiye stand out culturally.

As expected, Bodrum is significantly leading in terms of score, ranking first. The proximity to the airport, having a proper road (asphalt and gravel) inventory, the density of marine businesses in Göcek, its location on the route to Antalya and other major southern cities contribute to Fethiye's ranking as the second city. Ortaca and Dalaman are the subsequent destinations after Fethiye. It seems that the airport score has a high weight among the variables. Muğla's only international airport is in Dalaman, and its distance to Ortaca is approximately 12 kilometers.

If the dataset used in the section is expanded and updated and goes through the same empirical processes at certain intervals, it will be beneficial for national or international scale. If the reports that can be created take their place among the publications of the T.C. Güney Ege Kalkınma Ajansı, they can provide important ideas to the Ministry of Environment, Urbanization and Climate Change and those who want to invest in the region.

CHAPTER 5

ENVIRONMENTAL, HISTORICAL AND INFRASTRUCTURAL COMPOSITE INDICATORS AS GROWTH FACTORS

5.1. Introduction

The composite indicators created in the previous section are used as growth factors in the Solow-Swan growth model in this section. The dynamic model is used both to make the results in the third section robust and to benefit from the advantages of dynamic estimators.

5.2. Theoretical Background

Due to the complex and multifaceted structure of tourism, it is quite difficult to model a production function like other industries. Some studies developing an environmental growth model for a destination specialized in tourism sector, hedonic price function is utilized instead of Solow-Swan for modeling tourism revenue (see Lozano 2005 et al, 2005; Gomez et al, 2007; Lozano et al, 2008). In the other two original studies (see Giannoni, 2008; Smedal, 2015), the neo-classical production function is used in modeling tourism output, as in this dissertation.

Many environmental growth models adding the environmental variable to this economic growth model are used as a suitable tool to emphasize the importance of environmental constraints (Lozano et al. 2005, 2008; Beltratti, 1996; Cerina, 2012; Liu & Wu, 2019; Marsiglio, 2015; Brock & Taylor, 2005). The Cobb-Douglas production function is frequently utilized in tourism literature to analyze the concepts of growth, sustainability, and productivity in the field of tourism production. The Cobb-Douglas model can be readily linearized by taking its logarithm. Therefore, by utilizing the predicted coefficients of the inputs, one can readily analyze the elasticity of the inputs and their proportionate contribution to the overall output. Production inputs consist of labor, capital, and fixed-increment technology (Cerina, 2012; Liu & Wu, 2019; Lozano Ibáñez et al., 2011; Marsiglio, 2015; Smeral, 2015).

According to Lozano et al (2005), the attributes of environmental growth models offer valuable instruments for analyzing the progress in tourism destinations:

- The dynamic structure of the models helps detect intertemporal effects in resource distribution,
- Since the models are based on optimal control, they are useful for analyzing the impact of different policies on welfare,
- It also suggests the interdependence of different markets within the framework of general equilibrium.
- Models also shed light on the relationship between economic activity and environmental assets.
- Finally, it also provides the opportunity to examine market failures resulting from the use of environmental assets and resources.

In this study, Lozano et al. (2005) offer valuable insights into the dynamics of many variables, including tourists' inflow, tourism profits, environmental quality, and inhabitants' wellbeing, by significantly relaxing the underlying assumptions. This study assumes the presence of a supply-driven tourism economy, which sets it apart from other studies that investigate the connection between the tourism economy and the environment. There are numerous enterprises operating in the supply sector, with various economies actively participating in the market. The demand sector comprises diverse travelers with varying preferences and financial resources. Companies generate no profit. Similar to later studies examining the tourism industry (e.g., Cerina, 2012; Lozano et al., 2008), this study establishes the hedonic price function by considering factors such as the quality of the accommodation, environmental conditions, and public amenities. It calculates the coefficients of the inputs in total revenue using this function. Put simply, one can analyze the price sensitivity of demand in the tourism sector based on factors such as the quality of accommodations, environmental conditions, and public investments. In addition, it generates revenue for the public budget through the implementation of value added tax on tourism earnings. The intertemporal utility function is employed to specify the utility function of individuals throughout time. It is assumed that economy is populated by a single

representative agent which maximizes her utility. Environmental quality is regarded as a renewable resource, as the ability of nature to regenerate relies on environmental quality. Tourism activities exert a deleterious impact on the environment. The magnitude of these adverse consequences is contingent upon both the overall quantity of tourists and the number of amenities available. Despite its peculiarity, the study posits that investments aimed at expanding capacity have an adverse effect on the environment, whereas investments focused on enhancing quality without increasing capacity do not have a detrimental impact. This strategy adopts a simplified perspective, assuming that there will be no growth in visitor numbers due to the unchanged capacity. However, it is important to acknowledge that enhancing quality will result in increased consumption of electricity, water, and land, which entail environmental expenses. The study highlights that enhancing the quality of the tourism business will result in a higher equilibrium price, thus leading to a transformation in the socioeconomic status of the visiting visitors. Advocates contend that shifting from mass tourism to quality tourism can yield a beneficial influence on environmental quality. Instead of obtaining exact solutions using actual data, they produce data through simulation and analyze broad dynamic patterns. Exact answers are made according to parameters given hypothetical values. Given that a tourism destination starts with the highest degree of environmental quality, we can assign an initial value of 1 to it. Additionally, the capital per accommodation unit is assumed to be at the minimum level of 0,01. In this study, the economic growth theory is used to analyze how tourist destinations have changed through time. To provide some insights regarding the dynamics of the number of tourists, tourism revenues, environmental quality, congestion of public amenities, and welfare, we specifically build an environmental growth model. They also demonstrate how the average quality of the private tourism services offered in the tourist location affects the pattern of progression. The tourism destination eventually reaches a state of stagnation, according to their models. The caliber of the private tourism services, however, has a significant impact on how long the expansion period lasts. In particular, higher lodging standards indicate a longer period to attain stagnation, fewer visitors, stricter environmental standards, and less public amenities. The article serves as an example

of how economic growth models may be useful in understanding the dynamic behavior of economies dependent on the tourism sector. Results from an approach based on the construction of dynamic general equilibrium models and their calibration to actual data would be compared to actual patterns of evolution of particular tourist locations. We believe this methodology might be useful in understanding the factors that influence the evolution of tourist destinations because it has been effectively applied in other research areas such as business cycles or global macroeconomics.

Cerina (2012) assumes that there is a small economy specialized in tourism, a dynamic general equilibrium model was established. An endogenous and dynamic growth model was established with the production function of Cobb-Douglas. The stock of environmental assets, stock of tourism facility determine the demand of visitors. Demand is derived from the hedonic price theory. Output level is shown by the number of total night stays and the capital stock is proxied by total number of beds in tourism facilities. Residents determine the level of consumption and the cost to be spent on anti-pollution activities. (Because, there is no government that forces firms to make pollution abatement activities.) Balanced growth path analysis was performed. The model is able to perform both endogenous growth and sustainability. It is determined that the economy generally grows faster when the preferences of tourists are crowding-adverse and greener.

As is common knowledge, the 'Tourism Area Life Cycle' hypothesis states that a tourism destination goes through few stages of development before stagnation. The quantity of visitors, the reasons why they visit, how residents view the tourism phenomena, and the extent of environmental damage are a few of the aspects that distinguish these stages. This literature is closely related to the ideas of sustainability and carrying capacity because this last issue is frequently emphasized as one of the primary causes for the tourism destination's eventual stagnation. Studies testing the TALC hypothesis in the literature generally focus on a specific region. The methodology, on the other hand, is descriptive and not based on the analytical plane. The main weakness is that the growth theory has not been utilized while examining the development of tourism destinations (Lozano et al. 2008). The study follows the

methodology previously applied by the same trio (see Lozano et al., 2005; Gomez et al., 2008). Economic agents decide regarding the allocation of resources in the model while attempting to maximize their objective function. The market solution is socially suboptimal, according to a number of market flaws about the importance of environmental quality and public sector services in tourism (Lozano et al. 2008).

Lozano et al., (2008) developed an environmental growth model for an economy specializing in tourism and derive the pattern of tourism development with numerical calculations. Demand is estimated with the hedonic price function. Cobb-Douglas production function is used, facility capacity is proxy for capital, and the laborforce that employed in the sector is the proxy for labor. The model includes the public sector. The ad valorem tax applied to the total revenue in tourism finances the provision of public sector. Environmental quality is demonstrated by renewable resources. Because the accumulation of environmental quality depends on the renewable capacity of nature. It is stated, in the conclusion part of the study, the tourism destination eventually passes into the stagnation phase due to the scarcity of environmental resources, and the length of the growth period depends on the quality of private tourism services.

In his study, Smeral (2015) focuses on the expansion of supply in long-term hotel and restaurant services in certain nations. The study aims to ascertain the impact of various factors on development and the influence of multifactor productivity on growth by isolating the different components of production. The numerical analyses indicate that the expansion of the workforce in the hotel and restaurant industries significantly influences the growth of added value.

In the Solow-Swan model, the Cobb-Douglas production function is used (Solow, 1956; Swan, 1956):

$$Y = A.K^{\alpha}.L^{1-\alpha} \quad (51)$$

Here Y is total output, A is the level of technology, K is capital and L is labor. A shows the output elasticity of capital. There is an assumption of diminishing marginal returns. As capital increases, the return on additional capital decreases.

5.3. Methodology and Data

The chapter was designed according to the neo-classical Solow-Swan exogenous growth model. Empirically, the production function of Cobb-Douglas is applied in our study. It is also assumed that the technological levels of the districts are the same and fixed:

$$Y = F(E, C, I, K, L) \quad (53)$$

where Y refers to tourism output, K refers to capital, L refers to labor, E refers to environment, C refers to culture, and I refers to infrastructure.

$$Y = E_t^\Phi K_t^\delta L_t^\lambda \quad (54)$$

All indices are included in the model separately in order to estimate the parameters more consistently and to analyze their isolated share in tourism output.

$$Y = K_t^\delta L_t^\lambda C_t^\theta \quad (55)$$

While the capital and labor variables remain constant inputs, E , C and I are added to the model respectively and instead of each other.

$$Y = K_t^\delta L_t^\lambda I_t^\gamma \quad (56)$$

Tourism output will be proxied by the 'overnight stays of foreign arrivals'. 'Total room capacity of accommodation sector' refers to capital, labor is proxied by number of insured employees in the accommodation sector. The environment is proxied by the 'environmental index'. Culture is proxied by 'cultural index' and 'infrastructural index' is proxy for infrastructure. Φ , δ , λ , θ and γ are elasticities of the input variables.

The fact that economic growth is a dynamic process and the proliferation of the internet and travel forum sites have caused the concept of 'word of mouth' to become

a very important variable in the tourism industry. Therefore, the use of dynamic regression will create more consistent results. GMM estimation is employed due to its capacity to meet an adaptable specification of the instrumental variables. This flexibility ensures that the parameter estimates remain consistent while dealing with a finite number of time periods (T) and an extensive cross-sectional dimension (N) (see Holtz-Eakin et al., 1988; Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Bond, 1998). The Arellano-Bover/Blundell-Bond two-stage system generalized moments estimator is employed. In the model, instrumental variables increase the efficiency of the estimator. A two-system equation is established by original and transformed equations. Therefore, it is known as ‘system GMM’ (Yerdelen-Tatoglu, 2023). It solves the endogeneity, heteroskedasticity, serial correlation within groups, time invariant heterogeneity problems. In addition, it can include the autoregressive process of the dependent variable in the model. Furthermore, the model has capability to give effective results in cases where the limited time dimension is limited. Additionally, Yerdelen-Tatoglu (2023) emphasizes that using the first difference transformation causes a large loss of observations, so Arellano-Bond/Blundell-Bover recommends forward orthogonal deviations instead of first differences. The general model specification is as follows (Arellano & Bover, 1995; Blundell & Bond, 1998):

$$y_{it} = \alpha y_{i,t-1} + X'_{it}\beta + \eta_i + \varepsilon_{it} \quad (57)$$

y_{it} is dependent variable for individual i at time t , $y_{i,t-1}$ is lagged dependent variable, X'_{it} is vector of exogenous or endogenous regressors, η_i is time-invariant individual effects (if there are specific effects), ε_{it} is idiosyncratic error term. To address endogenous and individual specific effects, a first difference transformation is performed (Arellano & Bover, 1995; Blundell & Bond, 1998):

$$\Delta y_{it} = \alpha \Delta y_{i,t-1} + \Delta X'_{it}\beta + \Delta \varepsilon_{it} \quad (58)$$

The levels equation is obtained with moment conditions applied to the original data to complement the first-differenced equation. Arellano and Bover propose utilizing

instruments in the model to account for potential weak instruments both with differenced and level equations (Arellano & Bover, 1995; Blundell & Bond, 1998):

$$E[z_{i,t-k} \times \Delta \varepsilon_{it}] = 0, \quad k \geq 2 \text{ and } t \geq 3 \quad (59)$$

it is for the differenced equation. $z_{i,t-k}$ is lagged levels of y and X .

$$E[\Delta z_{i,t-k} \times \varepsilon_{it}] = 0 \quad (60)$$

and it is for the levels equation. The reason why it is called two-stage is that; in the first stage, initial weights are used, and in the second stage, the residuals from the first stage are used to compute an updated weighting matrix that accounts for heteroskedasticity and autocorrelation in the errors. Combining the moment conditions for differences and levels, the two-stage system GMM estimator minimizes a quadratic objective function (Arellano & Bover, 1995; Blundell & Bond, 1998):

$$J(\beta) = (Z'\epsilon)^T W (Z'\epsilon) \quad (61)$$

$(Z'\epsilon)$ is vector of moment conditions, W is the weighting matrix.

Estimate coefficients β by solving:

$$\beta = (X'ZWZ'X)^{-1}X'ZWZ'Y \quad (62)$$

Panel dataset is utilized. The cross-section consists of the counties of Muğla: Bodrum, Dalaman, Datça, Fethiye, Köyceğiz, Marmaris, Menteşe, Milas, Seydikemer, Ortaca, Ula, Yatağan. The time span extends from 2014 until 2021.

5.4. Empirical Results

In the empirical processes of neo-classical production models, the constant variable is accepted as the 'Solow residual' and expresses the contribution of technology to economic growth. However, since the indices used as inputs in the tourism growth model are used as proxies for environmental, cultural and infrastructural resources, when the model with constant variable is estimated, that constant parameter is insignificant and has an excessively high value. Therefore,

without constant variable model is estimated. It may mean that the total factor productivity of the host destinations in tourism output consists of environmental, cultural and infrastructural assets.

In order to estimate stable contributions of capital and labor inputs to output, the correlation matrix of these two estimators is analyzed.

Table 5.1. Correlation Matrix of Capital and Labor Variables

	ln (Room capacity)	ln (Insured employees)
ln (Room capacity)	1	
ln (Insured employees)	0,964	1

Thus, without deviating from theoretical suitability, the multicollinearity problem between the variables 'number of insured workers working in the accommodation sector' and 'room capacity in the sector' is prevented by creating interaction term by multiplying two variables. Growth accounting method is applied. It is an empirical methodology that allows us for fractionating of observed growth of GDP into components associated with changes in factor inputs. When the natural log-linearization is made to the production function, the coefficients show the share of the inputs in the growth as growth factors:

$$\ln(Y_{i,t}) = \alpha \ln(Y_{i,t-1}) + \delta \ln(K_{i,t}L_{ti}) + \Phi \ln(Index_{i,t}) \quad (63)$$

Indices are appended sequentially. While constructing the model, the growth theory literature was followed, and any control variable is not included in the regression as an independent variable. In the first model, environmental index is added, in the second model cultural index and in the third model infrastructural index is added. However, as each index variable is added, others are omitted from the model. When all index variables are added to the model as growth factors, the estimators lose their significance because they are not compatible with the theory and due to multicollinearity problems. However, real exchange rate (as a proxy for inbound tourism price) variable is included in all three models as external instrument. The cultural composite indicator is applied as an exogenous variable since it is uncorrelated

to the error term. Environmental index, infrastructural index, interaction variable are treated as endogenous ones. Lagged overnight stays is predetermined variable.

**Table 5.2: Arellano and Bover/Blundell and Bond Two-Stage System
Generalized Moments Robust Estimator Results: Dependent Variable:
Ln(Overnight stays)**

Variables	Models		
	(1) Environmental	(2) Cultural	(3) Infrastructural
Ln(Lagged overnight stays)	0,340**	0,537***	0,515***
Ln(Room capacity*Labor)	0,243***	1,253*	0,448*
Ln(Environmental index)	3,188***	-	-
Ln(Cultural index)	-	-6,98	-
Ln(Infrastructural index)	-	-	0,915
Observations	84	84	84
Wald chi2 prob.	0,000	0,000	0,000
AR(1)	-1,78	-1,86	-1,75
Prob.	0,076	0,063	0,08
AR(2)	0,82	0,63	0,92
Prob.	0,413	0,528	0,359
Robust Hansen Test	9,63	3,96	10,63
Prob.	0,292	0,412	0,224
Note: * p<0,05; ** p<0,01; *** p<0,001			

Two-step system orthogonal robust GMM estimation is performed. Orthogonal estimator aims to ensure independence or uncorrelatedness between instrumental variables or estimators. It is especially useful in cases where there are endogeneity problems. Robust estimation is used to make the results robust to heteroskedasticity and serial correlation problems.

The number of instrumental variables is below the number of individuals. While there are 11 instrumental variables, there are 12 units in the cross-section. When the test results are examined, the Wald chi-square values in all three models show that

the model is fit. It is seen that there is an autocorrelation problem at the AR(1) level in the 10% confidence interval in the error terms of all three models. However, there is no autocorrelation problem at the AR(2) level. This is an expected result. Again, the robust overidentification test of Hansen results in all three models show that the instrument variables are valid and the model specification is correct. When the coefficients are added in all three models (if the first lag of output is included), it is seen that it is greater than 1. Increasing returns to scale is seen in the tourism industry of Muğla. In fact, it is an indicator of how strategic tourism is for the region. However, since there is no 'constant returns to scale' in tourism production, the share of production interpretation of the inputs cannot be made.

In the empirical applications, the main thing to be tested is to determine the contribution of the created indices to tourism output growth. The growth factor coefficient of the environmental index in the tourism industry is 3,18. The estimator is significant at a 1% confidence interval. In other words, if the environmental index score can be increased by 10%, tourism output will also increase by 31,8%. The lagged dependent variable is significant and its coefficient is 0,340. In other words, foreign tourists who visit Muğla tend to come again and/or the effect of 'by word of mouth' is positive. 10% increase in the number of overnight stays creates a 3,4% increase in the output of the next period. It is seen that the t-value of the interaction term of capital and labor is significant and its coefficient is 0,243. A 10% increase in the input interaction term will increase the output by 2,4%.

In the second model, instead of the environmental composite indicator, the cultural index is used. The estimator of the 'lagged overnight stay' variable increased to 0,538. The parameter of the cultural index as a growth factor is insignificant. The insignificance of the cultural index confirms the empirical results in Chapter 3, where the explanatory factors of tourism demand are determined. The transformation of Muğla tourism into a completely sea-sand-sun tourism shortens the duration of the season. The cultural assets that are owned need to be polished with marketing and promotional activities. In addition, historical and cultural assets should be included in

the amalgam structured tourism product with the regulations applied. The coefficient of the variable with lag overnight stay is quite close to the first model.

In the last model, the infrastructure index is added instead of the other two indices. The results here are also consistent with the previous ones to some extent. Room capacity*labor (interaction term) input's estimator is significant. Coefficient of the variable is approximately 0,45. A 10% increase in interaction term results in a 4,5% increment in output. Similar to the cultural index, the infrastructure index seems to lack econometric significance.

5.5. Discussion

The main purpose of this section is to test whether the indicator values created in the previous section are factors in 'tourism output growth'. Growth accounting is applied with the Solow-Swan neo-classical growth model. The Arellano and Bover/Blundell and Bond two-stage system generalized moments robust estimator is employed due to several significant reasons. Since, it addresses the endogeneity problem arising from the nature of panel data, theoretically more suitable for tourism growth nature and $N > T$.

Empirical results show that the environmental index estimator is significant and has vastly high coefficient. When it comes to other indices, it is seen that the t-values of the parameters are insignificant. This result also confirms the empirical results in the section where tourism demand is modeled. Although Muğla has many cultural resources, it is insignificant as a production factor in the tourism industry. It is an indicator of the intensity of 'sea-sand-sun' tourism. It is also evidence that central planners should take concrete steps to increase the marketing and promotion activities of cultural elements. It is seen that the first lag of the dependent variable is also significant in every model. In other words, foreign tourists visiting Muğla tend to come again and/or the effect of 'by word of mouth' is positive. The capital and labor interaction term also appears to be significant, in line with expectations.

Another most important outcome of the section is that the tourism industry has the characteristic of 'increasing returns to scale', such that when all inputs' (including the lagged dependent variable) combination is increased by 1 unit, output increases by approximately 3,77 units.

The study provides very important messages to central planners and stakeholders. Regional planning should be sensitive to the environment. Protecting and increasing environmental assets will increase the output in the industry. On the other hand, more budget should be allocated for cultural heritage preservation, local themed events should be encouraged, promote regional diversity by highlighting unique cultural practices across different areas, digital platforms should be used as leverage by developing interactive websites and apps showcasing cultural assets, including virtual tours of cultural sites.

In a destination, it is quite challenging for tourism activities to take place in the absence of infrastructure and superstructure. Although infrastructure is highly important for tourism output, the infrastructural index continues to increase cumulatively; however, fluctuations in the number of arrivals have been observed over the years. Therefore, it is not surprising that the infrastructural index, as an input in the regression, cannot serve as an isolated determinant of overnight stays growth.

Another important econometric finding is that when estimating the model, the inclusion of the index variable (as a production input) and the constant variable (Solow residual) together makes the model econometrically insignificant. In other words, in the tourism industry in the districts of Muğla, the environmental index is in the position of 'total factor productivity' variable. If the 'environmental resources' variables are correctly selected while creating the tourism output model, it can be utilized as 'total factor productivity' input.

CONCLUSION

Tourism is a strategic sector that contributes to economic growth, creates employment and increases foreign exchange revenues, and also plays a key role in reducing regional inequalities by encouraging local development. So much so that Thailand established the 'Tourism Authority of Thailand' under the Ministry of Tourism and Sports solely to promote the tourism industry and protect the natural environment. It used the tourism industry as a strategic sector to overcome the foreign exchange-related financial crisis in 1997 with the international slogan 'Amazing Thailand'. Similarly, Spain created a 'Strategic Marketing Plan' with two main objectives related to tourism (Ministerio de Industria, Comercio y Turismo, 2021). These two main objectives are: (i) restore the demand for quality international tourism in Spain and (ii) identify and attract more economically interesting tourists who contribute to the sustainability of the destination. Costa Rica is an important tourism country with national parks that are home to rare creatures and volcanic regions that attract a lot of attention from tourists. However, considering the environmental damage caused by the industry, the national tourism plan 'Plan Nacional de Turismo de Costa Rica, 2022-2027' (Ministerio de Cultura y Juventud et al., 2022) prepared by five ministries is based on three pillars: (i) sustainability, (ii) innovation, (iii) inclusiveness. Although tourism constitutes an important component of the development plans of many countries, the characteristics of the industry pose environmental threats. In this context, environmental and historical factors are very important in modeling tourism demand. The reduction of the tourism economy to a simple supply-demand function and the exclusion of environmental, cultural and infrastructural variables from the model constitute a major obstacle to the creation of rational forecasting or projection of the model. Questions of "Are the factors determining tourism demand only economic ones? If we cannot adequately protect environmental and cultural assets, can Muğla still be a tourism paradise? Can I transform the environmental, cultural and infrastructural assets of Muğla into a series of numbers using quantitative methods?" constitute the backbone of the study.

According to the Travel & Tourism Competitiveness Index, which is the basis for many academic studies on tourism and is regularly prepared by the World Economic Forum (2024) every year, Türkiye ranks 29th with a score of 4,39 out of 7. However, Muğla, which is the focal region of the study, is the 3rd city in Türkiye that hosts the most inbound tourists. ‘Sea-sand-sun’ is the main type of tourism. Muğla has 238.773 bed capacity, hosts 3.000.000 tourists a year and generates an annual tourism income of approximately \$ 2.000.000.000 from inbound tourists. Moreover, the share of Muğla's direct inbound tourist expenditures in Türkiye's total is approximately 7% and the tourism GDP of Muğla constitutes approximately 30% of Muğla total (Muğla Culture and Tourism Provincial Directorate dataset, 2023; TURKSTAT, 2023). However, the average expenditure of an inbound tourist visiting Türkiye is 15% less than that of a visitor to Greece, which can be a substitute for Turkish tourist destinations (Turkish Ministry of Culture & Tourism statistics, 2023; <https://www.worlddata.info/europe/greece/tourism.php>).

In the third part of the dissertation, we started using econometric methods to answer the research questions. First, we defined a tourism demand function and constructed the theoretical background. We created a large dataset by reaching all the data that could be the determinant of tourism demand and that we could reach. The time period of the panel dataset covers the years 2014-2021, and the focal region is the districts of Muğla. The dependent variable is 'foreign tourists (non-excursionists)', and there are 25 independent variables. Those with perfect multicollinearity among them are removed. The dataset includes hypothetical and practically suitable economic, environmental, cultural-historical, infrastructural and social variables. Using the package program (Stata 18) algorithm, an optimal linear regression was created by using the adjusted R-squared model accuracy measure and information criteria such as AIC, BIC, CIC. The results are as expected on the one hand, but surprising on the other. So much so that it is quite clear how determinative the variables that can be associated with environmental quality are. Base specifications prove the importance of sea, forest and sustainability elements in the decision-making mechanism of tourists. The amount of treated water (m³) variable used as an environmental

sustainability proxy also has a positive effect on tourism output. On the other hand, it is clear that tourism and animal husbandry sectors are negatively related sectors. Both sad and surprising aspect of the research is that none of the variables that are proxies of Muğla's cultural heritage were among the optimal predictors. On the other hand, it is obvious how effective the infrastructural variables are on tourism demand. As such, asphalt and gravel road length and airport score are among the most important variables. As transportation becomes easier, tourism output increases. Greece's tourism destinations and Muğla districts also seem to be complementary goods. The results show that visitors to the Greek islands also travel to Muğla for tourism. This indicates that bilateral commercial gains can be increased with international cooperation.

In the next section, we aim to transform the environmental, cultural, and infrastructural characteristics of Muğla's districts into quantitative values, providing policymakers with scientifically grounded insights. Composite indicators have become an area of increasing interest in the academic world since the 2000s because they can bring together complex multidimensional realities, provide the opportunity to compare the performances of countries, and facilitate the analysis of their progress over time. Principal-component factor analysis method is utilized for multivariate analysis and weighting. Within this context, all variables have been consolidated into three main index variables: environmental, cultural, and infrastructural. The scores are attributed to each year of each district. Each index consisted of 104 observations. Thus, the comparison of the districts with each other and their changes over time can be interpreted in the light of these composite indicator values.

The natural environmental composite indicator scores of Marmaris, Datça and Ula are ahead of the other districts. The three districts have one thing in common. Both the land surface area and the large part of the sea waters of the 3 districts are within the 'special environmental protection' zone. The districts with the lowest scores are Dalaman, Kavaklıdere and Yatağan. The paper factory that had been operating in Dalaman for a long time has an environmental cost. Paper production requires a large amount of wood pulp. If uncontrolled tree cutting occurs, forests may decrease and

biodiversity may be lost. Although there is no definitive data, chlorine, sulfur and other chemicals used to convert wood pulp into paper in the factory may have been discharged into the river. Muğla's international airport is in Dalaman. The greenhouse gas emission load created by airplanes definitely causes environmental degradation. Kavaklıdere has large marble reserves. Marble activities, on the one hand, create economic value, on the other hand, they can harm nature. For this reason, the sustainability constraint should be included in the model when determining the optimal production amount in mining activities. Yatağan is home to the largest capacity thermal power plant in Muğla. The carbon emission created by the thermal power plant is also among the variables. The result is not surprising.

Although the name of the index is 'cultural', it also includes historical and gastronomic elements. Our cultural index consists of four variables. These are UNESCO heritage sites, archaeological site areas, historical monuments, castles, ruins, and ancient sites, as well as food culture heritage. Bodrum ranks first in terms of its cultural score. The district is home to ruins, ancient cities, archaeological site areas, and a grandiose castle, making it the top destination in terms of historical inventory. The fact that the prehistoric Carian kingdom was established in Bodrum means that there are many archaeological sites in the district. Being announced of Bodrum Castle in the UNESCO Heritage List in 2017 is another factor that increases the index score. Furthermore, it hosts five distinct gastronomy festivals. The majority of these festivals are traditional. Bodrum is the only district in which there are two Michelin-starred restaurants, making it the sole district with restaurants holding this prestigious title. Following districts are Fethiye Menteşe and Ortaca. Xanthos-Letoon has been included on the UNESCO Heritage List, which is a permanent status. Menteşe is ranks high on the list due to its numerous local culinary festivals and geographically indicated products. It can be observed that Seydikemer, Marmaris, Yatağan and Ula have low cultural index values. It should be remembered that Ula's architecture with wooden balconies has a good reputation. However, due to the inability to construct a parameter related to architecture, it is not included in the index.

As expected, it can be observed that Bodrum is significantly leading in terms of score, ranking first. The proximity to the airport, having a long road (asphalt and gravel) inventory, the density of marine businesses in Göcek, its location on the route to Antalya and other major southern cities contribute to Fethiye's ranking as the second city. Ortaca and Dalaman are the subsequent destinations after Fethiye. It seems that the airport score has a high weight among the variables. Muğla's only international airport is in Dalaman, and its distance to Ortaca is approximately 12 kilometers. Köyceğiz, Datça, are ranked at the lowest positions in the infrastructure score. Köyceğiz's limited coastal area, delayed private and public investments compared to other districts, and its focus on agriculture and forestry (namely sweetgum woods and citrus groves) have a negative impact on its infrastructural overall score. Considering Datça's isolated location, the serious differences between its resident and summer population, and the great struggle of environmentalists to prevent the opening of a marina, it is normal for the index value to be low. The entire district is designated as a special environmental protection zone, which poses legal barriers to the construction of asphalt and concrete infrastructure.

In the last section of the dissertation, all the indices created by using the Solow-Swan exogenous growth model are estimated by adding them to other traditional production inputs. The results of the econometric applications made with dynamic panel methods are quite impressive. The environmental index, which is one of the indices utilized as an independent variable, is econometrically significant and has high explanatory power. Regional and sectoral planning should be sensitive to the environment. However, the cultural and infrastructure indices are not significant as explanatory inputs of tourism output growth in the growth accounting regression analysis. The absence of cultural elements among the inputs of tourism outputs is a serious issue that central planners and stakeholders should consider. The tourism product basket contains many services, experiences, environmental and historical assets due to the amalgam structure of the sector. Considering that the districts of Muğla are destinations offering traditional tourism products, the meaninglessness of the cultural index may sound 'normal'. However, Muğla has hosted many prehistoric

civilizations. The cultural and historical elements of a region that has more than one place and craft on the UNESCO heritage list should affect the tourism output. Muğla, which has a strong gastronomy and folklore heritage, has districts with hundreds of years of expertise in old craft fields such as carpet weaving, felt weaving, wood carving, tin weaving and basket weaving. When the search for authentic goods and services of tourists is considered, the existence of handmade products that can be promoted is clearly seen. With regulations, our gastronomic and folkloric heritage can be included in the services provided by hotels and restaurants. Expenditures made for the restoration and protection of our cultural and historical assets can be increased and they can be turned into photo spots. With the cooperation of ministries and municipalities, digital platforms (websites, mobile applications, virtual tours) can be used more effectively and cultural and historical assets can be added to the list of 'must-visit places' of visitors. As the tourism product basket expands, the duration of the tourist's visit is extended. The vital points in increasing tourist revenues are the type and duration of tourism.

The infrastructure index is also econometrically insignificant in growth accounting. Undoubtedly, a destination must have certain necessary conditions for tourism activity to take place. However, when the function of infrastructure assets over time is examined (the model excludes wear and tear), it has a stable or increasing characteristic. However, the 'overnight stays' used as the dependent variable in our model has an up-and-down trend over time. Therefore, the inability of the infrastructure index to explain variations in the number of tourists in isolation is econometrically normal.

Lagged dependent variable is also significant in all three models. In other words, foreign tourists visiting Muğla tend to come again and/or the effect of 'by word of mouth' is positive. Another most important output of the last chapter is that the tourism industry has the characteristic of 'increasing returns to scale' in Muğla. If the environmental index, which is the independent variable with the highest coefficient, can be increased, the increase in output will be proportionally greater than that input.

REFERENCES

- ACAR, S., CİNOĞLU ŞAHİN, D., KARAGÖZ, T., KAYGISIZ, G., MEYDAN, M. C. & IŞIK, M.: 2022 “İlçelerin Sosyo-Ekonomik Gelişmişlik Sıralamasi Araştırmasi SEGE”, **Kalkınma Ajansları Genel Müdürlüğü Yayını** Sayı: 35, Ankara.
- AGIOMIRGIANAKIS, G., BERTSATOS, G. & TSOUNIS, N.: 2018 “Asymmetric responses in the tourism demand function”, **The Journal of Economic Asymmetries**, Elsevier, vol. 181.
- AP, J.: 1990 “Residents’ perceptions research on the social impacts of tourism”, **Annals of Tourism Research** 17(4): 610–616.
- AP, J and CROMPTON, J.L.: 1998 “Developing and testing a tourism impact scale”, **Journal of Travel Research** 37(2): 120–130.
- ARELLANO, M.: 1987 “Computing Robust Standard Errors for Within-Groups Estimators”, **Oxford bulletin of Economics and Statistics**, 49 (4), 431-434.
- ARELLANO, M. and BOVER, O.: 1995 “Another Look at the Instrumental Variable Estimation of Error-Component Models”, **Journal of Econometrics**, 68, 29-52. [http://dx.doi.org/10.1016/0304-4076\(94\)01642-D](http://dx.doi.org/10.1016/0304-4076(94)01642-D)
- ASLAN, A., KAPLAN, M. & KULA, F.: 2008 “International Tourism Demand for Türkiye: A Dynamic Panel Data Approach”, **MPRA Paper** 10601, University Library of Munich, Germany.
- BALAGUER, J. and CANTAVELLA-JORDA, M.: 2002 “Tourism as a Long-Run Economic Growth Factor: The Spanish Case”. **Applied Economics**, 34, 877-884. <http://dx.doi.org/10.1080/00036840110058923>
- BALTAGI, B., H.: 2021 “Econometric Analysis of Panel Data”, **Springer Texts in Business and Economics**, Springer, edition 6, number 978-3-030-53953-5, April.
- BARTLETT, M. S.: 1951 “The Effect of Standardization on a 2 Approximation in Factor Analysis”. **Biometrika**, 38, 337-344
- BELLOUMI, M.: 2010 “The Relationship between Tourism Receipts, Real Effective Exchange Rate and Economic Growth in

- Tunisia”, **International Journal of Tourism Research**, 12(5), 550- 560.
- BLAKE, A., Tourism and poverty relief. **Annals of Tourism Research** 35(1): 107–126.
- ARBACHE, J. S.,
SINCLAIR M. T., et al.: 2008
- BLUNDELL, R. and “Initial Conditions and Moment Restrictions in Dynamic Panel Data Models”, **Journal of Econometrics**, 87, 115-143. [http://dx.doi.org/10.1016/S0304-4076\(98\)00009-8](http://dx.doi.org/10.1016/S0304-4076(98)00009-8)
- BOND, S.: 1998
- BORN, B. and “Testing for Serial Correlation in Fixed-Effects Panel Data Models”, **Econometric Reviews**, vol. 35, issue 7, 1290-1316.
- BREITUNG, J.: 2016
- BRYANT, F. B., and “Principal-components analysis and exploratory and confirmatory factor analysis.” In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 99–136). American Psychological Association.
- YARNOLD, P. R.: 1995.
- BRIASSOULIS, H.: “Methodological Issues: Tourism Input-Output Analysis.” **Annals of Tourism Research**, 18, 485-495. [https://doi.org/10.1016/0160-7383\(91\)90054-F](https://doi.org/10.1016/0160-7383(91)90054-F)
- 1991
- BRIASSOULIS, H.: “Sustainable tourism and the question of the commons”, **Annals of Tourism Research**, 29: 1065–1085.
- 2002
- BURNS, P. M. and **Tourism: A New Perspective**, Prentice Hall.
- HOLDEN, A.: 1995
- CALERO, C. and "Regional economic development and tourism: A literature review to highlight future directions for regional tourism research," **Tourism Economics**, vol. 26(1), pages 3-26, February.
- TURNER, L. W.: 2020
- CANDELA, G. & **The Economics of Tourism Destinations**. Springer, Berlin Heidelberg. <http://dx.doi.org/10.1007/978-3-642-20874-4>
- FIGINI, P.: 2012
- CARVACHE-FRANCO, M., “The Tourist Demand from The Perspective of The Motivation, Assessment And Satisfaction In A Sun And Beach Destination: The Manta Case, Ecuador”, **GeoJournal of Tourism and Geosites**. 22(2), 561–572. <https://doi.org/10.30892/gtg.22224-311>
- CARVACHE-FRANCO, O. D.,
CARVACHE-

- FRANCO, W.,
VILLAGOMEZ-
BUELE, C. &
PENAFIEL, M. A.:
2018
- CERINA, F.: 2012 "Endogenous Growth and Sustainable Tourism". Working Paper CRENoS from Centre for North South Economic Region.
- CEVIK, S.: 2022 "Dirty Dance: Tourism and Environment", **IMF Working Paper** No. 2022/178, Available at SSRN: <https://ssrn.com/abstract=4224066>
- CHESNEY, M. and HAZARI, B.: 2003 "Illegal migrants tourism and welfare: A trade theoretic approach", **Pacific Economic Review** 8(3):259-268 DOI:10.1111/j.1468-0106.2003.00226.x
- CAPO, J., RIERA, F., A. & ROSSELLO, N. J.: 2007 "Dutch disease in tourism economics: evidence from Balearics and the Canary Islands", **Journal of Sustainable Tourism**, 15(6): 615–627.
- CHERCHYE, L., MOESEN, W., ROGGE, N. & PUYENBROECK, T.: 2008 "Constructing a Knowledge Economy Composite Indicator with Imprecise Data" Working Papers of Department of Economics, Leuven.
- COHEN, E.: 1972 "Toward a Sociology of International Tourism". **Social Research**, 39, 164-189.
- COHEN, E.: 1979 "A Phenomenology of Tourist Experiences," **Sociology**, Vol. 13, No. 2, 1979, pp. 179-201.
- COMERIO, N. and STROZZI, F.: 2019. "Tourism and its economic impact: A literature review using bibliometric tools", **Tourism Economics**, vol. 25(1), pages 109-131, February.
- COOPER, C. P., FLETCHER, J., GILBERT, D., SHEPHARD, R., & WANHILL, S.: 1998 **Tourism. Principles and practice** (2nd ed.). New York: Longman.
- COPELAND, B.: 1991 "Tourism, welfare, and de-industrialization in a small open economy", **Economica**, 58: 515–529.

- CORTINA, J. M.: 1993 “What Is Coefficient Alpha? An Examination of Theory and Applications”, **Journal of Applied Psychology** 78(1):98-104.
- CROES, R., and VANEGAS, M.: 2005 “An econometric study of tourist arrivals in Aruba and its Implications”, **Tourism Management**, 26(6), 879-890.
- CROES, R. and VANEGAS, M.: 2008 “Cointegration and causality between tourism and poverty reduction”. **Journal of Travel Research** 47(1): 94–103.
- ÇAKAR, Ö., DURMUŞ, E., & ARSLAN, H.: 2011 “Muğla Zeytin Üretiminde Milas İlçesi’nin Yeri”, **Fırat Üniversitesi Sosyal Bilimler Dergisi**, 21(1).
- DALAMAN DISTRICT GOVERNORSHIP: 2023 “District Directorate of Agriculture and Forestry report”, 2023. Access date: 19.12.2023 <http://www.dalaman.gov.tr/ilce-gida-tarim-ve-hayvancilik-mudurlugu#:~:text=%C4%B0l%C3%A7e%20merkezi%20y%C3%BCkseltisi%2014%20metredir,%2C06%20km.%27dir>
- DANN, G. M.: 1981 “Tourist Motivation an Appraisal”. **Annals of Tourism Research**, 8, 187-219.
- DATCA MUNICIPALITY: 2021 “About the District”, 2021. Access date: 17.05.1998. <https://www.mugla.bel.tr/sayfa/datca-hakkinda>
- DRITSAKIS, N.: 2004 “Tourism as a Long-Run Economic Growth Factor: An Empirical Investigation for Greece Using Causality Analysis”. **Tourism Economics**, 10, 305-316. <https://doi.org/10.5367/0000000041895094>
- DUPEYRAS, A. AND N. MACCALLUM: 2013 “Indicators for Measuring Competitiveness in Tourism: A Guidance Document”, OECD Tourism Papers, 2013/02, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5k47t9q2t923-en>
- DWYER, L., FORSYTH, P., MADDEN, J., ET AL.: 2000 “Economic impacts of inbound tourism under different assumptions regarding the macroeconomy”. **Current Issues in Tourism**, 3(4): 325–363.

- DWYER, L. & FORSYTH, P.: 2006 **International Handbook on the Economics of Tourism**, Books, Edward Elgar Publishing, number 2827.
- DWYER, L., & FORSYTH, P., & DWYER, W.: 2020 **Tourism Economics and Policy**, Channel View Publications, 2nd Edition.
- EICKER, F.: 1967 “Limit Theorems for Regressions with Unequal and Dependent Errors”, **Proceedings of Fifth Berkeley Symposium on Mathematical Statistics and Probability**, Vol. 1, No. 1, 59-82.
- ENDEKSA: 2023 “Housing unit (m2) prices (\$) of cities: 2018-2022”. Access date: 02.08.2023. <https://www.endeksa.com/tr/hizmetler/bolge-analizi>
- ENERJİ ATLASI: 2023 “Renewable energy production (kwh): 2014-2021” Access date: 13.09.2023
- ERARSLAN, HAKKI; KASIMOĞLU, MURAT; KILINÇ, İZZET; BALDEMİR, ERCAN; GÖKALP, FAYSAL; KUTUKIZ, DOĞAN; AVCI, UMUT; TOPALOĞLU, CANER: 2010A “Muğla İli Turizm Sektörünün Uluslararası Rekabetçilik Analizi”, **Muğla Valiliği**, Ağustos.
- ERARSLAN, HAKKI; KASIMOĞLU, MURAT; KILINÇ, İZZET; BALDEMİR, ERCAN; GÖKALP, FAYSAL; KUTUKIZ, DOĞAN; AVCI, UMUT; TOPALOĞLU, CANER: 2010B “Muğla İli Turizm Sektörünün Kümelenme Analizi ve Makro Düzey Stratejik Planı”, **Muğla Valiliği**, Ağustos.
- EUROSTAT: 2008 “NACE Rev.2 Statistical classification of economic activities in the European Community,” **Eurostat Methodologies and Studies Working Papers**, European Commission. Access date: 06.11.2024 <https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>

- FERNÁNDEZ-KELLY, MARÍA, P.: 1983 "We Are Sold, I and My People: Women and Industry in Mexico's Frontier". **Albany: State University of New York Press.**
- FETHIYE CHAMBER OF COMMERCE AND INDUSTRY: 2024 "Annual Economic Report 2007", Access date: 24.01.2024.
<https://www.ftso.org.tr/assets/upload/dosyalar/2007.pdf>
- FLETCHER, J. E.: 1989 "Input-output analysis and tourism impact studies". **Annals of Tourism Research** 16(4): 514–529.
- FLETCHER J. & FYALL, A., & WANHILL, S. & GILBERT, D.: 2018 **Tourism: Principles & Practice.** Edition, 6. Publisher, Pearson Education.
- GARIN-MUNOZ, T.: 2006 "Inbound International Tourism to Canary Islands: A Dynamic Panel Data Model", **Tourism Management**, 27 (2), 281 – 291.
- GARIN-MUNOZ, T.: 2007 "German Demand for Tourism in Spain", **Tourism Management** 28 (1), 12-22.
- GARIN-MUNOZ, T. & MONTERO-MARTIN L. F.: 2007 "Tourism in the Balearic Islands: A dynamic model for international demand using panel data", **Tourism Management** 28 (5), 1224-1235.
- GHALI, M. A.: 1976 "Tourism and Economic Growth: An Empirical Study," **Economic Development and Cultural Change**, University of Chicago Press, vol. 24(3), pages 527-538, April.
- GIANNONI, S.:2009 "Tourism, Growth and Residents' Welfare with Pollution," Post-Print hal-04654787, HAL.
- GLOBALDATA PLC: 2018 "Top 6 technology trends to watch out for in the travel and tourism industry in 2018"
<https://www.globaldata.com/media/technology/top-6-technology-trends-watch-travel-tourism-industry-2018/>
Access date: 02.05.2022.
- GLOBAL FOREST WATCH: 2022 "Annual Dashboards 2021". Access date: 01.12.2022.
<https://www.globalforestwatch.org/dashboards/country/TUR/?map=eyJYW5Cb3VuZCI6dHJlZX0%3D>

- GOELDNER, C.R. & RITCHIE, J.R.B.: 2009 **Tourism: Principles, Practices, Philosophies**. Wiley.
- GOOGLE INC.: 2023 “Google maps”, edited by user. Access date: 22.09.2021.
- GONZALEZ, P. & MORAL, P.: 1995 “An analysis of the international tourism demand in Spain”, **International Journal of Forecasting**, Elsevier, vol. 11 (2), 233-251.
- GÖSSLING, S. & PEETERS, P.: 2015 “Assessing tourism's global environmental impact 1900–2050”. **Journal of Sustainable Tourism**, 23(5), 639-659.
- GRONAU, R.: 1977 “Leisure, Home Production, and Work—the Theory of the Allocation of Time Revisited”. **Journal of Political Economy**, 85(6), 1099–1123. <https://doi.org/10.1086/260629>
- GU M., WONG P.: 2006 “Residents’ perception of tourism impacts: a case study of homestay operators in Dachangshan Dao, North-East China”, **Tourism Geographies** 8(3): 253–273.
- GUNN, C.: 1987 “A perspective in the purpose and nature of tourism and hospitality research methods”. In J. Ritchie & C. Goeldner (Eds.), **Travel, tourism and hospitality research**. Chichester: Wiley.
- GURSOY D. & RUTHERFORD DG.: 2004 “Host attitudes toward tourism: an improved structural model”, **Annals of Tourism Research** 31(3): 495–516.
- GÜNEY EGE & KALKINMA AJANSI: 2020 “Muğla sektörel destekler ve raporlar”. 15 Aralık 2020 tarihinde erişildi. <https://geka.gov.tr/tr/sayfa/mugla-sektorlerimiz-ve-yatirim-ortami>
- HADJIKAKOU, M., MILLER, G, CHENOWETH J, ET AL.: 2015 “A comprehensive framework for comparing water use intensity across different tourist types”. **Journal of Sustainable Tourism** 23(10): 1445–1467.
- HAIR J.F., ANDERSON R.E., TATHAM R.L., & BLACK W.C.: 1995 **Multivariate data analysis with readings**, fourth ed. Prentice Hall, Englewood Cliffs, NJ.

- HAIR, J.F. & BLACK, W.C. & BABIN, B.J. & ANDERSON, R.E.: **Multivariate Data Analysis**. 7th Edition, Pearson, New York. 2010
- HARRIS, K. R., GRAHAM, S., URDAN, T., MCCORMICK, C. B., SINATRA, G. M., & SWELLER, J. (EDS.): "APA educational psychology handbook", Vol. 1. Theories, constructs, and critical issues. **American Psychological Association**. <https://doi.org/10.1037/13273-000> 2012
- HAZARI, B. & SGRO, P.: "Tourism and Growth in a Dynamic Model of Trade", **Journal of International Trade and Economic Development** 4(2):185-195 DOI:10.1108/S0573-8555(2004)0000265012 1995
- HAZARI, B. R. & SGRO, P. M.: **Tourism, Trade and National Welfare**, Amsterdam, Elsevier. 2004
- HECKSCHER, E.: 1919 "The Effect of Foreign Trade on the Distribution of Income", **Ekonomisk Tidskrift**, 497-512. Reprinted as Chapter 13 in A.E.A.
- HECKSCHER, E., & OHLIN, B.: **International and Inter-Regional Trade**. Cambridge: Harvard University Press. 1933
- INSTITUTO DE TURISMO DE ESPAÑA (TURESPAÑA): 2022 DE Plan Estratégico de Marketing 2021-2024, Ministerio de Industria, Comercio y Turismo, March.
- INTERNATIONAL MONETARY FUND: "Data Quality Assessment Framework (DQAF)", July. 2003
- T.C. HARITA GENEL MÜDÜRLÜĞÜ: 2024 "Muğla Mülkî İdare İl Haritası", T.C. Milli Savunma Bakanlığı. Access Date: 01.12.2024. <https://www.harita.gov.tr/uploads/files/products/mugla-mulk-idare-il-haritasi-1367.pdf>
- HOLDEN, A.: 2008 **Environment and Tourism**. Routledge.

- HOLZNER, M.: 2005 “Fear of Croatian disease: Is there a danger of a Dutch disease effect with respect to a boom in the tourism sector in Croatia in the long run – “The Croatian case”.” Doctoral thesis, WU Vienna University in Economics and Business, Austria.
- HSIAO, C.: 2014 **Analysis of Panel Data**, 3rd edition. Cambridge, University Press.
- HSIAO, C., and B. SUN: 2000 “To Pool or Not to Pool Panel Data”, in J. Krishnakumar and E. Ronchetti, eds., **Panel Data Econometrics: Future Directions**. Amsterdam: North Holland Publishing Company, pp. 181–198.
- HUBER, P.J.: 1967 “The Behavior of Maximum Likelihood Estimates under Nonstandard Conditions”, **5th Berkeley Symposium on Mathematical Statistics and Probability**, University of California Press, Berkeley, Vol. 1, 221-223.
- IATA: 2024 “International Air Transport Association database”. <https://www.iata.org/en/services/data/>
- INCHAUSTI-SINTES, F.: 2015 “Tourism: Economic growth, employment and Dutch Disease,” **Annals of Tourism Research**, Elsevier, vol. 54I, pages 172-189.
- INDIANA’S WORKFORCE AND ECONOMY: 2006 “Location Quotients A Tool for Comparing Regional Industry Compositions”, March, pp. 1-3. https://www.incontext.indiana.edu/2006/march/pdfs/1_LQ.pdf
- INSTITUTO DE TURISMO DE ESPAÑA (TURESPAÑA): 2022 “PLAN ESTRATÉGICO DE MARKETING 2021-2024”, Ministerio de Industria, Comercio y Turismo.
- ISSERMAN, A. M.: 1977 “The Location Quotient Approach to Estimating Regional Economic Impacts.” **Journal of the American Institute of Planners**, Vol.43, Pages 33-41.
- JAMES, G., WITTEN, D., HASTIE, T., & TIBSHIRANI, R.: 2013 **An Introduction To Statistical Learning** (1st ed).
- JOHNSON, R. L. and MOORE, E.: 1993 “Tourism impact estimation”. **Annals of Tourism Research** 20(2): 279–288.

- JOHNSON, R., and WICHERN, D.: 2014 **Applied Multivariate Statistical Analysis**, Pearson New International Edition (7th ed.). Pearson Education Limited.
- KALKINMA AJANSLARI GENEL MÜDÜRLÜĞÜ: 2023 “İlçelerin sosyo-ekonomik gelişmişlik sıralaması araştırması (SEGE) 2022”, **T.C. Sanayi ve Teknoloji Bakanlığı**.
<https://www.sanayi.gov.tr/assets/pdf/birimler/2022-ilce-sege.pdf>
- KARABURUN GOVERNORSHIP: 2019 “Karaburun-Ildır Özel Çevre Koruma Alanı Report”, Access date: 03.11.2024.
[http://www.karaburun.gov.tr/karaburun-ildir-ozel-cevre-koruma-](http://www.karaburun.gov.tr/karaburun-ildir-ozel-cevre-koruma-alani#:~:text=%C3%96zel%20%C3%87evre%20Korum)
[alani#:~:text=%C3%96zel%20%C3%87evre%20Korum](http://www.karaburun.gov.tr/karaburun-ildir-ozel-cevre-koruma-alani#:~:text=%C3%96zel%20%C3%87evre%20Korum)
[a%20B%C3%B6lgeleri%3B%20Do%C4%9Fal,ekolojik](http://www.karaburun.gov.tr/karaburun-ildir-ozel-cevre-koruma-alani#:~:text=%C3%96zel%20%C3%87evre%20Korum)
[%20a%C3%A7%C4%B1dan%20olduk%C3%A7a%20](http://www.karaburun.gov.tr/karaburun-ildir-ozel-cevre-koruma-alani#:~:text=%C3%96zel%20%C3%87evre%20Korum)
[hassas%20alanlard%C4%B1r.](http://www.karaburun.gov.tr/karaburun-ildir-ozel-cevre-koruma-alani#:~:text=%C3%96zel%20%C3%87evre%20Korum)
- KAISER, H. F.: 1960 “The application of electronic computers to factor analysis”, **Educational and Psychological Measurement**, 20, 141–151. <https://doi.org/10.1177/001316446002000116>
- KHAN, H. S., PHANG, R. & TOH, R.: 1995 “The Multiplier Effect: Singapore’s Hospitality Industry”, **Cornell Hotel and Restaurant Administration Quarterly**, Vol.36, pp. 64-69.
- KIM, H.J., CHEN, M. & JANG, S.S.: 2006 “Tourism Expansion and Economic Development: The Case of Taiwan”. **Tourism Management**, 27, 925-933.
<https://doi.org/10.1016/j.tourman.2005.05.011>
- KÖYCEĞİZ PROVİNCIAL DIRECTORATE OF ENVIRONMENT, URBANIZATION AND CLIMATE CHANGE: 2024 “About Köyceğiz”, Access date: 17.09.2024.
[https://mugla.csb.gov.tr/koycegiz-dalyan-i-](https://mugla.csb.gov.tr/koycegiz-dalyan-i-5223#:~:text=K%C3%B6yce%C4%9Fiz%20G%C3%B6l%C3%BC%20ile%20deniz%20aras%C4%B1daki,uzunlu%C4%9Funda%20bir%20k%C4%B1y%C4%B1%20okundan%20olu%C5%9Fmaktad%C4%B1r)
[5223#:~:text=K%C3%B6yce%C4%9Fiz%20G%C3%B6l%C3%BC%20ile%20deniz%20aras%C4%B1daki,uzunlu%C4%9Funda%20bir%20k%C4%B1y%C4%B1%20okundan%20olu%C5%9Fmaktad%C4%B1r](https://mugla.csb.gov.tr/koycegiz-dalyan-i-5223#:~:text=K%C3%B6yce%C4%9Fiz%20G%C3%B6l%C3%BC%20ile%20deniz%20aras%C4%B1daki,uzunlu%C4%9Funda%20bir%20k%C4%B1y%C4%B1%20okundan%20olu%C5%9Fmaktad%C4%B1r)
- LAMONICA, G.R. & MATTIOLI, E.: 2015 “Research Note: The Impact of the Tourism Industry on the World’s Largest Economies—An Input-Output Analysis”. **Tourism Economics**, 21, 419-426.

- LANZA, A. & PIGLIARU, F.: 2000 "Tourism and Economic Growth: Does a Country's Size Matter?". **Rivista Internazionale di Scienze Economiche e Commerciali**, 47, 77-85.
- LANZA, A., TEMPLE, P., & URGÀ, G.: 2003 "The Implications of Tourism Specialization in the Long Run: An Econometric Analysis for 13 OECD Economies". **Tourism Management**, 24, 315-321.
- LAWSON, E.: 1991 **Tourism Marketing**, Cheltenham: Stanley Thornes.
- LEIPER, N.: 2000 **An emerging discipline**. *Annals of Tourism Research*, 27, 805-809.
- LENZEN, M., SUN, Y., FATURAY, F., TING, Y., GESCHKE, A. & MALIK, A.: 2018 "The carbon footprint of global tourism" **Nature Climate Change**, volume 8, pages 522-528.
- LI, S., BLAKE, A., COOPER, C.: 2011 "Modelling the economic impact of international tourism on the Chinese economy: a CGE analysis of the Beijing 2008 Olympics". **Tourism Economics**, 17(2): 279-303.
- LIANG, K. & ZEGER, S.: 1986 "Longitudinal Data Analysis Using Generalized Linear Models". **Biometrika**, 73, 13-22.
<https://doi.org/10.1093/biomet/73.1.13>
- LIM, C. & MCALEER, M.: 2000 "A seasonal analysis of Asian tourist arrivals to Australia," **Applied Economics**, Taylor & Francis Journals, vol. 32(4), pages 499-509.
- LIU, A. & WU D., C.: 2019 "Tourism productivity and economic growth", **Annals of Tourism Research**, vol. 76, issue C, 253-265.
- LIU, H., XIAO, Y., WANG, B. & WU, D.: 2021 "Effects of tourism development on economic growth: An empirical study of China based on both static and dynamic spatial Durbin models", **Tourism Economics**, 1-26.
- JAVIER LOZANO & CARLOS M. GOMEZ & JAVIER REY-MAQUIEIRA: 2008. "The TALC Hypothesis and Economic Growth Theory," **Tourism Economics**, vol. 14(4), pages 727-749, December.
- LOZANO IBÁÑEZ, J., GOMEZ, C., & REY-MAQUIEIRA, J.: 2011 "An Analysis of the Evolution of Tourism Destinations from the Point of View of the Economic Growth Theory".

- SSRN Electronic Journal, I.
<https://doi.org/10.2139/ssrn.861885>
- LUCAS, R. E.: 1988 “On the Mechanics of Economic Development”. **Journal of Monetary Economics**, 21, 3-42.
[https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- LUZZI, F. G., & FLUCKIGER, Y.: 2003 “Tourism and international trade: Introduction”. **Pacific Economic Review**, 8(3), 239-243.
- MA, J., SUN G. N. & MA, S. Q.: 2018 “Assessing holistic tourism resources based on fuzzy evaluation method: a case study of Hainan tourism island”. **Advances in Intelligent Systems and Computing** 646: 434–446.
- MARPLES, M.: 2020 “Can the world’s oldest restaurant escape the pandemic’s grasp?” **CNN travel**, Access date: 02.05.2022
<https://edition.cnn.com/travel/article/worlds-oldest-restaurant-madrid-pandemic>
- MARSIGLIO, S.: 2015 “Economic growth and environment: Tourism as a trigger for green growth”. **Tourism Economics**, 21(1), 183–204. <https://doi.org/10.5367/te.2014.0411>
- MARMARIS DISTRICT GOVERNORSHIP “History of Marmaris”, 2022, Access date: 10.07.2022.
<https://www.marmaris.gov.tr/kaymakamligimizin-tarihcesi#:~:text=Daha%20sonra%20MARMAR%C4%B0S%20ad%C4%B1n%C4%B1%20alm%C4%B1%C5%9Ft%C4%B1r,72%20km%20k%C4%B1y%C4%B1%20uzunlu%C4%B1%20vard%C4%B1r>
- MATIAS, A., NIJKAMP, P., ROMÃO, J.: 2011 **Tourism Economics: Impact Analysis**. Publisher: Springer. DOI:10.1007/978-3-319-14920-2.
- MATIAS, A. & NIJKAMP, P. & SARMENTO, M. (ED.): 2011 **Tourism Economics**, Springer Books, Springer, number 978-3-7908-2725-5, June.
- MADEN TETKİK VE ARAMA MÜDÜRLÜĞÜ: 2010 “Muğla İli Maden ve Enerji Kaynakları” **MTA GENEL MÜDÜRLÜĞÜ**. Access date: 24.10.2023.
https://www.mta.gov.tr/v3.0/sayfalar/bilgi-merkezi/maden_potansiyel_2010/Mugla_Madenler.pdf

- MARIN, D.: 1992 "Is the Export-Led Growth Hypothesis Valid for Industrialized Countries?" **The Review of Economics and Statistics**, 74(4), 678–688. <https://doi.org/10.2307/2109382>
- MASON, P.: 2008 **Tourism Impacts, Planning and Management**, Butterworth-Heinemann, Oxford.
- MCKINNON, R.: 1964 "Foreign exchange constraint in economic development and efficient aid allocation". **Economic Journal**, 74, 388–409.
- MENG, X.: 2014 "Is a Tourism Subsidy the Best Response to the Global Financial Crisis? A Short-run CGE Simulation for Singapore" **Asia Pacific Journal of Tourism Research**, 19(3), p. 325-341.
- MENTEŞE DISTRICT GOVERNORSHIP "About Menteşe", 2022, Access date: 03.10.2022. <http://mentese.gov.tr/ilcemiz-hakkinda>
- MİLAS DISTRICT GOVERNORSHIP "History of Milas", 2024, Access date: 03.04.2024. <http://www.milas.gov.tr/milasin-tarihcesi>
- MILLER, M. M., GIBSON, L. J. & WRIGHT, N. G.: 1991 "Location Quotient: A basic tool for development analysis", **Economic Development Review**, Access date: 03.10.2024. <https://www.proquest.com/openview/d6011b83d027b7ad1dba29bb96b74a53/1?pq-origsite=gscholar&cbl=38209>
- MINISTERIO DE CULTURA Y JUVENTUD ET AL.: 2022 "Plan nacional de turismo de Costa Rica, 2022-2027", **Instituto Costarricense de Turismo**.
- MINISTRY OF CULTURE AND TOURISM OF TÜRKİYE "Capacities of accommodation establishments 2014-2021", 2021, Obtained via personal communication.
- MUĞLA PROVINCIAL DIRECTORATE OF CULTURE AND TOURISM "Geography of Ortaca", 2022, Access date: 03.04.2022 <https://mugla.ktb.gov.tr/TR-270793/cografya-konum-iklim-ulasim.html>

- MUĞLA SOCIAL SECURITY INSTITUTION DIRECTORATE “Number of registered workers and businesses in districts 2014-2021”, 2022, Obtained via personal communication.
- MUNDA, G. and NARDO, M. :2005 “Constructing Consistent Composite Indicators: the Issue of Weights”. EUR 21834, JRC32434. Access date: 24.10.2023.
<https://core.ac.uk/download/pdf/38619689.pdf>
- MURPHY, P. E.: 1985 **Tourism. A Community Approach.** New York-London: Methuen.
- MURPHY, P. E.: 2012 **Tourism. A Community Approach.** New York-London: Methuen.
- MUĞLA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ STRATEJİ GELİŞTİRME DAİRESİ BAŞKANLIĞI: 2015 “2015 Yılı Faaliyet Raporu” **MUSKİ**, Mart.
- MUĞLA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ STRATEJİ GELİŞTİRME DAİRESİ BAŞKANLIĞI: 2016 “2016 Yılı Faaliyet Raporu” **MUSKİ**, Mart.
- MUĞLA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ STRATEJİ GELİŞTİRME DAİRESİ BAŞKANLIĞI: 2017 “2017 Yılı Faaliyet Raporu” **MUSKİ**, Mart.
- MUĞLA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ STRATEJİ GELİŞTİRME DAİRESİ BAŞKANLIĞI: 2018 “2018 Yılı Faaliyet Raporu” **MUSKİ**, Mart.

MÜDÜRLÜĞÜ
STRATEJİ
GELİŞTİRME
DAİRESİ
BAŞKANLIĞI: 2018

MUĞLA SU VE “2019 Yılı Faaliyet Raporu” **MUSKİ**, Mart.
KANALİZASYON
İDARESİ GENEL
MÜDÜRLÜĞÜ
STRATEJİ
GELİŞTİRME
DAİRESİ
BAŞKANLIĞI: 2019

MUĞLA SU VE “2020 Yılı Faaliyet Raporu” **MUSKİ**, Mart.
KANALİZASYON
İDARESİ GENEL
MÜDÜRLÜĞÜ
STRATEJİ
GELİŞTİRME
DAİRESİ
BAŞKANLIĞI: 2020

MUĞLA SU VE “2021 Yılı Faaliyet Raporu” **MUSKİ**, Mart.
KANALİZASYON
İDARESİ GENEL
MÜDÜRLÜĞÜ
STRATEJİ
GELİŞTİRME
DAİRESİ
BAŞKANLIĞI: 2021

NARDO, M., M. “Handbook on constructing composite indicators:
SAISANA, A. methodology and user guide”, **OECD Statistics**
SALTELLI, S. **Working Paper** by, STD/DOC (2005) 3, see
TARANTOLA, A. Publications and Documents at <http://www.oecd.org/> .
HOFFMAN AND E.
GIOVANNINI: 2005

NILLSON, R.: 2004 “Confidence Indicators and Composite Indicators”, paper
presented at the 25th CIRET. Conference, Paris.

NJOOYA, E. T. & “Tourism Contribution to Poverty Alleviation in Kenya:
SEETARAM, N.: 2017 A Dynamic Computable General Equilibrium Analysis”,
Journal of Travel Research, Volume 57, Issue 4.

- NOWAK, JEAN- JACQUES AND SAHLI, MONDHER AND SGRO, PASQUALE MICHAEL: 2004 **Tourism, Trade and Domestic Welfare**, Available at SSRN: <https://ssrn.com/abstract=504445> or <http://dx.doi.org/10.2139/ssrn.504445>
- NUNNALLY, J. C., & BERNSTEIN, I. H.: 1994 **Psychometric Theory** (3rd ed.). New York McGraw-Hill.
- OECD: 2005 “Handbook on constructing composite indicators: methodology and user guide”, **OECD Statistics Working Paper** by, STD/DOC (2005) 3, see Publications and Documents at <http://www.oecd.org/>.
- OECD: 2024 Recommendation of the Council on Regional Development Policy, OECD/LEGAL/0492.
- OH, C. K.: 2005 “The contribution of tourism development to economic growth in the Korean economy”. **Tourism Management**, 26, 39–44.
- PALAN, N.: 2010 “Measurement of Specialization # The Choice of Indices,” FIW Working Paper, No. 62, FIW - Research Centre International Economics, Vienna. Access date: 26.03.2022. https://www.econstor.eu/bitstream/10419/121065/1/N_062.pdf
- PLOG, S. C.: 1974 “Why Destination Areas Rise and Fall in Popularity.” **Stanley C.** Volume 14, Issue 4.
- PARK, H.M. “Practical Guides to Panel Data Modeling: A Step-by-Step Analysis Using Stata”, 2011, **Tutorial Working Paper**, International University of Japan, Minami Uonuma.
- PAYNE, J. E. & MERVAR, A.: 2002 “A Note on Modelling Tourism Revenues in Croatia”, **Tourism Economics**, 8(1), pp. 103-109.
- PENA, D. G.: 1997 “The Terror of the Machine: Technology, Work, Gender, and Ecology on the U.S.-Mexico Border”, **Austin: Center for Mexican-American Studies**, University of Texas at Austin.

- POLENSKE K. R. and HEWINGS G. J. D.: 2004 "Trade and spatial economic interdependence". **Papers in Regional Science** 83(1): 269–289.
- PORTER, M. E.: 1990 **The Competitive Advantage of Nations**. New York: Free Press.
- PINDYCK, R.S. and RUBINFELD, D.L.: **Microeconomics**, 8th Edition, Pearson Education, New Jersey, 2014.
- REPUBLIC OF TÜRKİYE MINISTRY OF CULTURE AND TOURISM: 2023 "Number of Foreign Tourists Arriving Türkiye: 2012-2023". <https://yigm.ktb.gov.tr/TR-9851/turizm-istatistikleri.html>
- REPUBLIC OF TÜRKİYE MUĞLA GOVERNORSHIP: 2021 "Muğla Tarihçesi". Access date: 13.9.2021 <http://www.mugla.gov.tr/tarihce>.
- REPUBLIC OF TÜRKİYE MINISTRY OF CULTURE AND TOURISM: 2023 "Number of foreign tourists entering through Muğla's border Gates: 2000-2022". <https://mugla.ktb.gov.tr/TR-271192/turizm-istatistikleri.html>
- REPUBLIC OF TÜRKİYE MINISTRY OF ENERGY AND NATURAL RESOURCES, 2022 "Türkiye Elektrik Üretimi ve Elektrik Tüketim Noktasi Emisyon Faktörleri Bilgi Formu". ETKB-EVÇED-FRM-042 Rev.00.
- RICO, A., MARTINEZ-BLANCO, J., MONTLLEO, M., RODRIGUEZ, G. ET AL.:2019 "Carbon footprint of tourism in Barcelona", **Tourism Management**, 70 (2019) 491-504.
- RYBCZYNSKI, T. M.: 1955 "Factor Endowment and Relative Commodity Prices," **Economica**, New Series, Vol. 22, No. 88, November 1955, pp. 336-341.
- ROMERO, M. D. P. P. and MOLINA, J. A.: 2013 "Tourism and economic growth: A review of empirical literature". **Tourism Management Perspectives**, 8:28–41.

- SALTELLI, A.: 2002 "Making best use of model valuations to compute sensitivity indices", **Computer Physics Communications**, 145: 280-297.
- SALTELLI, A., TARANTOLA, S., CAMPOLONGO, F. AND RATTO, M.: 2004 "Sensitivity Analysis in practice, a guide to assessing scientific models", New York: John Wiley & Sons. Software for sensitivity analysis is available at <http://www.jrc.ec.europa.eu/uasa/prj-sa-soft.asp>
- SALTELLI, A.: 2007 "Composite indicators between analysis and advocacy", **Social Indicators Research**, 81: 65-77.
- SALTELLI, A., RATTO M., ANDRES T., CAMPOLONGO F., CARIBONI J., GATELLI D. SAISANA M., & TARANTOLA S.: 2008 **Global Sensitivity Analysis**. The Primer, John Wiley & Sons.
- SAISANA M., TARANTOLA S. AND SALTELLI A.: 2005 "Uncertainty and sensitivity techniques as tools for the analysis and validation of composite indicators", **Journal of the Royal Statistical Society**, A, 168(2), 307-323.
- SCHUBERT, S. F. and BRIDA, J. G.: 2009 "A Dynamic Model of Economic Growth in a Small Tourism Driven Economy", **MPRA Paper** 16737, University Library of Munich, Germany.
- SINCLAIR, M. and STABLER, M.: 1997 **The Economics of Tourism**, Advances in Tourism (1st ed.). Routledge.
- SMERAL, E.: 2015 "Restaurant Industries". 413–424.
- SMITH, V. L.: 1977 **Hosts and Guests: The Anthropology of Tourism**, Philadelphia, University of Pennsylvania Press.
- SONG, H., & WITT, S.F., & LI, G.: 2009 **The Advanced Econometrics of Tourism Demand** (1st ed.). Routledge.
- SONG H, DWYER L, LI G, ET AL.: 2012 "Tourism economic research: a review and assessment", **Annals of Tourism Research** 39(3): 1653–1682.
- STABLER, M. J., PAPATHEODOROU, **The economics of tourism** (2nd ed.). London: Routledge.

A., & SINCLAIR, M.
T.: 2010

STEVENS, J. P.: 2009 **Applied Multivariate Statistics for the Social Science**, 5th Edition.

SUGIYARTO G, “Tourism and globalization: economic impact in
BLAKE A and Indonesia”. **Annals of Tourism Research**, 30(3): 683–
SINCLAIR M.T.: 2003 701.

SUN, Y. Y.: 2016 “Decomposition of tourism greenhouse gas emissions:
revealing the dynamic between tourism economic
growth, technological efficiency, and carbon emissions”.
Tourism Management 55: 326–336.

SUN, Y. Y. & PRATT, “The economic, carbon emission, and water impacts of
S.: 2014 Chinese Visitors to Taiwan”. **Journal of Travel
Research** 53(6): 56(3): 733–746.

SUNLU, U.: 2003 “Environmental impacts of tourism”, **Environmental
Science**.

SWARBROOKE, J.: Sustainable Tourism Management Wallingford: CABI
1999 Publications.

T.C.
CUMHURBAŞKANLI “On İkinci Kalkınma Planı 2024-2028”, Ankara. Access
ĞI STRATEJİ VE date: 09.11.2024. [https://www.sbb.gov.tr/wp-
BÜTÇE content/uploads/2023/11/On-Ikinci-Kalkinma-
BAŞKANLIĞI: 2023 Plani_2024-2028_17112023.pdf](https://www.sbb.gov.tr/wp-content/uploads/2023/11/On-Ikinci-Kalkinma-Plani_2024-2028_17112023.pdf)

T.C. GÜNEY EGE “TR32 Düzey 2 Bölgesi 2024-2028 Bölge Planı”, T.C.
KALKINMA AJANSI: **Sanayi ve Teknoloji Bakanlığı**. Access date:
2021 12.10.2024. <https://geka.gov.tr/tr/sayfa/planlar>

TOVAR, C. & “Social impacts of tourism: an Australian regional case
LOCKWOOD, M.: study”, **International Journal of Tourism Research**,
2008 10(4):365 – 378. DOI:10.1002/jtr.667

TRIBE, J.: 2004 **The Economics of Recreation, Leisure and Tourism**
(Vol. 3).

TURKSTAT: 2024 “Average spending of a foreign tourist during a holiday”,
2024, Access date: 12.02.2024.

TURKSTAT: 2024		“Population statistics by districts: 2014-2023”, Access date: 12.02.2024. https://data.tuik.gov.tr/Kategori/GetKategori?p=nufus-ve-demografi-109&dil=1
TURKSTAT: 2023		“Education statistics by districts: 2014-2022”, Access date: 08.11.2023. https://data.tuik.gov.tr/Kategori/GetKategori?p=egitim-kultur-spor-ve-turizm-105&dil=1
TURKSTAT: 2021		“Geographic Statistics Portal”, 2021, Access date: 08.11.2023. https://cip.tuik.gov.tr/
TURKSTAT: 2021		"GDP per capita: 2004-2020". Access date: 02.08.2021. https://cip.tuik.gov.tr/
TURKSTAT: 2023		“Foreign trade statistics by province”, Access date: 02.09.2024.
TURKSTAT: 2023		“Türkiye tourism income: 2004-2021”. https://data.tuik.gov.tr/Bulten/Index?p=Turizm-Istatistikleri-IV.-Ceyrek:-Ekim---Aralik,-2023-53661
TURKSTAT: 2023		“Unemployment rate statistics: 2014-2021”, Access date: 20.6.2023. https://data.tuik.gov.tr/Kategori/GetKategori?p=Istihdam,-Issizlik-ve-Ucret-108
TÜRÇEV: 2023		“Number of blue flag beaches of districts: 2014-2021”. Access date: 13.08.2023. https://www.mavibayrak.org.tr/turkiye/anasayfa.aspx
TÜRKİYE EXPORTERS ASSEMBLY: 2024		“Muğla ihracat istatistikleri: 2014-2023”. https://tim.org.tr/tr/ihracat-rakamlari
TÜRKİYE KURUMU: 2021	İŞ	“İşgücü Piyasası Araştırması Muğla İli 2021 Yılı Sonuç Raporu”. Muğla Çalışma ve İş Kurumu İl Müdürlüğü.
UNITED NATIONS, EUROPEAN COMMISSION, INTERNATIONAL MONETARY FUND, ORGANISATION FOR ECONOMIC CO-		“International Recommendations for Tourism Statistics 2008” Department of Economic and Social Affairs , Series M No. 83/Rev.1.

OPERATION AND
DEVELOPMENT, &
WORLD TOURISM
ORGANIZATION:
2008A

UNITED NATIONS,
EUROPEAN
COMMISSION,
INTERNATIONAL
MONETARY FUND,
ORGANISATION FOR
ECONOMIC CO-
OPERATION AND
DEVELOPMENT, &
WORLD TOURISM
ORGANIZATION:
2008B

“The 2008 Tourism Satellite Account: Recommended
Methodological Framework” **Economic and Social
Affairs**, Series F No. 80/Rev.1.
[https://unstats.un.org/unsd/publication/seriesf/seriesf_80
rev1e.pdf](https://unstats.un.org/unsd/publication/seriesf/seriesf_80_rev1e.pdf)

UNESCO WORLD
HERITAGE
CONVENTION

“World Heritage List”, 2023, Access date: 01.03.2023.
<https://whc.unesco.org/en/statesparties/tr>

UNITED NATIONS
DEVELOPMENT
PROGRAMME: 2021

“Regional programme document for Europe and the
Commonwealth of Independent States (2022-2025)”,
DP/RPD/REC/5.

UNITED NATIONS
WORLD TOURISM
ORGANIZATION:
2024

“Global Annual Tourism Flows 2010-2023”, Calle Poeta
Joan Maragall 42, 28020 Madrid, Spain. Access date:
16.10.2024. [https://www.unwto.org/tourism-data/global-
and-regional-tourism-performance](https://www.unwto.org/tourism-data/global-and-regional-tourism-performance)

UNUR, KAMIL &
İSKENDERÖĞLU,
ÖMER & ŞEKER, F.:
2019

“The Analyze of The Factors Affecting Tourism
Demand: A Research on The Mediterranean Basin
Countries”, **Social Mentality and Researcher Thinkers
Journal** 5(20):1054-1063 DOI:10.31576/smryj.311.

UYSAL, M.: 1998

“The Determinants of Tourism Demand: A theoretical
perspective”, **The Economic Geography**, p.79-94.

VU, C., & TURNER,
L.: 2006

“Regional data forecasting accuracy: The case of
Thailand.” **Journal of Travel Research**, 45(2), 186-193.

WHITE, H.: 1980

“A Heteroscedasticity-Consistent Covariance Matrix
Estimator and a Direct Test for Heteroscedasticity”,
Econometrica, 48, 817-838.

- WILLIAMS, S.: 1998 **Tourism Geography**, 1st edition, Routledge, New York.
- WILLIAMS, G.: 2016 “Economic Impacts from Development of the Coastal Town in Queensland on Tourism and Regional Economy”. **Resources**, 5, 48. <https://doi.org/10.3390/resources5040048>
- WILSON, T. D.: 2008 “Economic and Social Impacts of Tourism in Mexico”, **Latin American Perspectives** 35(3):37-52 DOI:10.1177/0094582X08315758
- WITT, S.F. AND WITT, C.A. “Forecasting Tourism Demand: A Review of Empirical Research”, 1995, **International Journal of Forecasting**, 11, 447-475.
- WOLF, M. J, & EMERSON, J. W., & ESTY, D. C., & DE SHERBININ, A., & WENDLING, Z. A., ET AL.: 2022. “Environmental Performance Index”, New Haven, CT: Yale Center for Environmental Law & Policy. <https://epi.yale.edu/>
- WOOLDRIDGE, J.M. **Econometric Analysis of Cross Section and Panel Data**, 2nd Edition, MIT Press, Cambridge, 2010.
- WORLD BANK OPEN DATA: 2024 “Global Population: 2010-2023”, World Bank Group. <https://data.worldbank.org/indicator/SP.POP.TOTL>
- WORLD BANK OPEN DATA: 2024 “Global GDP Per Capita Annual Growth: 2010-2023”, World Bank Group. <https://data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG> <https://www.worlddata.info/europe/greece/tourism.php>
- WORLD ECONOMIC FORUM: 2013 “The Travel and Tourism Competitiveness Report 2013”, 6th issue. https://www3.weforum.org/docs/WEF_TT_Competitiveness_Report_2013.pdf
- WORLD ECONOMIC FORUM: 2019 “The Travel & Tourism Competitiveness Report 2019”. Geneva: WEF Press.
- WORLD TRAVEL & TOURISM COUNCIL: 2024 “The Economic Impact of Global Travel & Tourism”, 2024, May, pp. 1-21. https://assets-global.website-files.com/6329bc97af73223b575983ac/6643349dbfdbc3e3c03afcb8_EIR2024-World-130524.pdf

- YERDELEN-TATOĞLU, F. & GUL, H.: 2020 "Analysis of tourism demand using a multi-dimensional panel gravity model", 2020, **Tourism Review** 75 (2), 433-447.
- YERDELEN-TATOĞLU, F.: 2024 **Panel Veri Ekonometrisi: Stata Uygulamalı**, 7th edition, Beta Yayınları.
- YERDELEN-TATOĞLU, F.: 2023 **İleri Panel Veri Analizi: Stata Uygulamalı**, 5th edition, 4025, Beta Yayınları.
- ZHANG, W. B.,: 2012 "Tourism And Economic Structure in A Small Open Growth Model," **Journal of Advanced Research in Management**, ASERS Publishing, vol. 3(2), pages 76-92.
- ZHANG, B., SHI, Z., YU, L., JIANG, W., TIAN, M., AND LIU, L.: 2014 "Dabie Mountain sports tourism project development location problems research under growth pole theory perspective", **Journal of Chemical and Pharmaceutical Research**, 6(6):460-464.
- ZHOU, D., YANAGIDA, J. F., CHAKRAVORTY, U., ET AL.: 1997 "Estimating economic impacts from tourism". **Annals of Tourism Research** 24(1): 76–89.
- ZHAO, X., LI, T., DUAN, X.:2024 "Studying tourism development and its impact on carbon emissions", **Sci Rep.** 14(1):7463.
- ZHOU-GRUNDY, Y., & TURNER, L. W.: 2014 "The challenge of regional tourism demand forecasting: The case of China." **Journal of Travel Research**, 53(6), 747-759
- ZOPIATIS, A. & SAVVA C. S. & LAMBERTIDES, N.: 2020 "The non-inclusive nature of 'all inclusive' economics: Paradoxes and possibilities of the resort complex". **Tourism Management**, 78, 104054.
- ZUELOW, E. G.: 2011 **Touring Beyond the Nation: A Transnational Approach to European Tourism History**. ed. Eric G.E. Zuelow (Farnham: Ashgate, 2011), 5.
- ZUELOW, E. G.: 2015 **A History of Modern Tourism**, London: Palgrave. ISBN 978-0-23036964-1.

CV

Çağrı ARSLAN

SUMMARY

PhD Candidate, Master of Science in Economics, Masters in Financial Development.
2 years financial investments sector. 2+ years working experience as a research assistant in Economics & Finance department. 5+ years working experience in construction sector.

EDUCATION

2018 – Present İstanbul University, Ph.D.

Department: Economics, GPA: 3,10

Dissertation: “Empirical Applications in Tourism Demand and Tourism Output Growth: The Case of Muğla”

2015 -2018 Muğla University, Master of Science

Department: Economics, GPA: 3,57

Thesis: “Finansal Gelişmenin Ekonomik Büyüme Üzerine Etkisi: Yüksek-orta gelirli ülkelerde ekonometrik bir analizi”

2008-2014 Ege University, BSc

Faculty: Faculty of Economics and Administrative Sciences, GPA: 2,58

Department: Economics (English)

LANGUAGES

Turkish (Native), English (YÖKDİL 96,25), Russian (A2).

PAPERS

“Remodeling Tourism Demand Using Optimal Predictors: The Case of Muğla”, 2024,
Ekonomi ve Yönetim Araştırmaları Dergisi.

CONFERENCES

“Analyzing Financial Depth and Environmental Degradation Nexus: OECD Countries.” İstanbul Gelişim Üniversitesi 2. Uluslararası Ekonomi ve Finans Konferansı

COMPUTER SKILLS

Microsoft Office

Stata

E-views