CAPPADOCIA VISITOR PROFILE ANALYSIS : POST-CRISIS CHANGE AND ITS DYNAMICS

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Abstract

Cappadocia which is both UNESCO cultural and natural heritage area is in 32 (3%) very rare area in 1031 UNESCO heritage sites. It is an important destination with high potential product diversity in the field of natural, historical and cultural circumstances. On the other hand, destinations' performances do not just depend on the feature of destinations, but also the macro-criteria (such as security or transportation capabilities) of related countries.

To be able to make segmentation in terms of marketing mix theory, analyzing the visitor profile has crucial role. Measuring changes on market provides decision makers to make root cause analysis and put forward which countermeasures should be taken/developed. In this perspective, aim of this study is to classify the visitors stayed in Cappadocia country, term and stayed nights basis and to determine the factors (and effect levels) affecting their travel choices in a macro environmental perspective between 2011 and 2015. The secondary aim of the study is to figure out the long-term relationship among countries' travel behaviors to Cappadocia considering stochastic trend. For these aims, cluster analysis is done for objective classification. The factors (and affects level) that affect visitors' travel are figured out via setting panel regression model. In addition, cointegration analysis is used to figure out the long-term relationship among visitors. Results show that while Germany, France and Turkey had unique visiting time pattern which means that they all have a specific visiting behavior, European Union countries had medium sized similar strength on Cappadocia travel. And Canada, Hong Kong, France and Japan had long term similar visiting pattern. Finally, fixed affect panel regression analysis results present that GDP is the only significant variable that affects visitors' visiting behavior for Cappadocia.

Keywords: Cappadocia, destination profile change, cluster analysis, cointegration analysis, panel regression

JEL Codes: C32, M30, L83, Z31, Z32

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KAPADOKYA GEZGİN PROFİLİ ANALİZİ : KRİZ SONRASI DEĞİŞİM VE DİNAMİKLERİ

Özet

Kapadokya, dünyada mevcut 1031 miras alanı içerisinde, bünyesinde hem doğal hem de kültürel özellikler barındıran 32 ender bölge arasında (%3) yer almaktadır. Doğal, tarihi ve kültürel alanda yüksek ürün çeşitliliği ile ön plana çıkan önemli bir destinasyondur. Diğer yandan gezginlerin seyahat tercihleri sadece destinasyon özelliklerine değil, o ülkedeki makro kriterlere (güvenlik, ulaşılabilirlik gibi) bağlı olarak da değişkenlik göstermektedir.

Pazarlama karması kapsamında pazarı bölümlendirebilmek, hedef pazarlara farklı hizmetler sunabilmek adına son derece önemlidir. Pazarda meydana gelen değişimleri ölçümlemek, bir yandan neden sonuç ilişkisi kurulabilmesini sağlarken, aynı zamanda geleceğe ilişkin alınması gereken tedbirleri/gelişim noktalarını da tayin eder. Bu çerçevede, bu çalışmanın temel amacı, Nevşehir İli (Kapadokya) sınırları içerisinde 2011-2015 yılları arasında konaklayan yabancı turistlerin, ülke, konaklama gün sayısı ve dönemi bazında benzerliklerine göre sınıflandırılması; bu ülkelerin/grupların Kapadokya ziyaretini etkileyen faktörlerin ve etki düzeylerinin belirlenmesidir. Bu ülkelerin kendi aralarındaki ilişkilerinin, stokastik eğilimi de dikkate alarak ortaya konması, çalışmanın ikincil amacını oluşturmaktadır. Bu kapsamda kümeleme analizi ile gözlemlerin benzerlikleri temel alınarak objektif bir sınıflandırma yapılmıştır. Gezginlerin Kapadokya ziyaretine etki eden faktörler ise panel regresyon analizi ile analiz edilmiştir. Uzun vadede birlikte hareket eden ülke gruplarını belirlemek için ise eşbütünleşme analizi kullanılmıştır. Analiz sonuçlarına göre, incelenen dönemde Fransa, Almanya ve Türkiye'nin incelenen kriterler bazında farklı bir tutum sergiledikleri; Kanada, Fransa, HongKong ve Japonya'nın ise uzun dönemde birlikte hareket ettikleri görülmüştür. Avrupa Birliği ülkeleri ise Kapadokya seyahatlerinde orta kuvvette benzer bir davranış sergilemişlerdir. Sabit etkiler panel regresyon sonuçları ise, ekonomik büyümenin, farklı ülkelerden Kapadokya'ya gelen turist sayıları üzerinde anlamlı bir etkisi olduğunu göstermektedir.

Anahtar Kelimeler: Kapadokya, gezgin profili değişimi, kümeleme analizi, eşbütünleşme analizi, panel regresyon

JEL: C32, M30, L83, Z31, Z32

1. INTRODUCTION

Cappadocia is one of the strangest destinations in the world with its nature, history and culture. It has lots of touristic instrument such as churches, more than 100 discovered underground cities, valleys, fairy chimneys and caves. Van Raaij (1986, 3) viewed the travel destination as a product, which is partly ‘‘given’’ and partly ‘‘man-made.’’ The ‘given’ part means to natural specifications of destinations as historical or cultural objects/buildings scenery, climate and mountains. On the other hand, ‘man-made’ means the features such as infrastructures, accommodation facilities, structured tours, transportation alternatives/opportunities and other facilities. So, the destination point of view, Cappadocia has a big potential on being a unique and differentiated destination in the world with mountains, structured tour programs, qualified human resources, hot air balloon flights, safety/security, flights from big cities (Antalya, İzmir, İstanbul), well qualified accommodation places and very high customer satisfaction rates. According to the data of UNESCO World Heritage Site List (2014), there are total 911 places in this list including Cappadocia. Cappadocia is one of the 27 interesting places which are in both cultural and natural (mix) list (Figure 1.). One of the other important output is that Cappadocia meets 4 selection criteria of 7 of UNESCO world heritage areas. In figure 1, there are total 130 world heritage sites that meet 4 and above selection criteria. And Cappadocia can also be evaluated in this scope. Some of the world heritage sites and achieved selection criteria can be seen in table 1.

Figure 1: **Situation of Cappadocia in UNESCO World Heritage Areas (2014)**

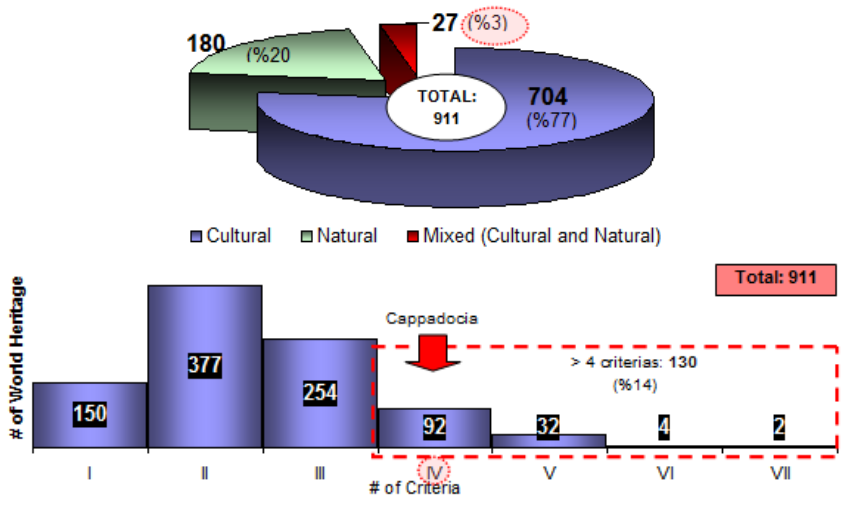


Table 1: **Some of the WHS in world**

World Heritage Site	# of Criteria	Type of Heritage
Sydney (Australia)	1	Cultural
Mostar Bridge (Bosnia)	1	
Rapa Nui (Chili)	3	
Praha	3	
Egypt Pyramid	3	
Pisa (Italy)	4	
Stonehenge (UK)	3	
Taj Mahal	1	
Istanbul	3	
Victoria Waterfall	2	Natural
Katmandu (Nepal)	1	
Grand Canyon (USA)	4	

1.1. Objectives of Study

Aim of this study is to analyze the realities behind the numbers which present the number of foreign visitors coming from more than 150 countries to Cappadocia and find the root causes of reductions/increases between 2011 and 2015. In line with this main objective, if the guest countries affected each other or the separate patterns will be introduced, and dynamic behaviors will be presented. By the way, guest profiles will be revealed to segment market and produce different products/services to related segments. In this manner, one of the main distinguishing point of this study is to inform decision and policy makers about the visitor profile change in Cappadocia in recent years and to brighten them about the potential future trend.

1.2. Process and Related Studies

Analyzing the accommodated visitor profile is so important in terms of determining the problems, planning/taking countermeasures and developing the tourism policies/strategies. In this perspective, 3 different methodologies were applied to analyze visitor profile accommodated in Cappadocia between the years 2011-2015. First method applied in this study is cluster analysis which is used in tourism sector as a methodology to evaluate competitiveness of decision making units, segmenting guest profiles, to group the resident perceptions. Applications are focused on two most common objectives in tourism research: Market segmentation and perceptions toward tourism. In market segmentation, the analysis

allows tourism researchers to understand the different groups and to modify their product to target markets. It allows more efficient allocation of resources which should then lead to the generation of additional income. On the other hand, on the perception research area, the assessment of how residents of a host community feel about tourism has seen numerous applications of cluster analysis with the aim of understanding the impacts of tourism. Leung and Baloglu (2013, 371-384) have suggested cluster analysis to figure out destinations' competitiveness. On the other study, Brida et al. (2010, 592-598) analyzed the segmentation of host population by using cluster analysis. Brida et al. (2012, 80-105) assessed residents' perceptions of the impact of cruise tourism by cluster analysis. Cruz Vareiro et al. (2013, 535-551) used cluster analysis to classify residents based on their perception of the impact of tourism development. Chen (2011, 127) grouped residents by their perception of the tourism impact events via using cluster analysis Hudson and Ritchie (2002, 263-276) used cluster analysis to segment domestic visitors based on their decision-making behavior.

Secondly, cointegration analysis is applied to figure out the long-run relationship of countries' accommodation behavior in Cappadocia. Cointegration analysis is generally used in tourism sector on tourism revenues-economic growth, real gross domestic product, trade openness and real exchange rate relations, tourism type and its determinants, short- and long- run relationships between visitor arrivals and long-run demand for tourism destinations. Seddighi and Shearing (1997, 506) argued the elements of tourism prices at the destinations. Dritsakis (2004, 111-119) investigates changes in the long-run demand for tourism to Greece by Britain and Germany via VAR model.

Third methodology used in this research is panel regression model. Examples of studies estimating the role of relative prices and income are Seddighi and Shearing (1997, 499-511), Garin-Munoz (2009, 753-769), Taylor and Arigoni (2009, 803-812), Bigano et.al., (2006, 25-49) and Athanasopoulos and Hyndman (2008, 19-31). Algieri (2006, 5-20) examined the determinants of and their relevant impact on tourism revenues in Russia over the period 1993 to 2002. Variations in income, exchange rates and prices, as well as unpredicted events such as relevant political changes were identified as the relevant factors affecting demand. A cointegration analysis is performed and the results suggested a robust and significant long-run cointegration relationship between Russian tourism receipts, world GDP, real exchange rates and prices of air transport. Seddighi and Shearing (1997, 499-511) and Garin-Munoz

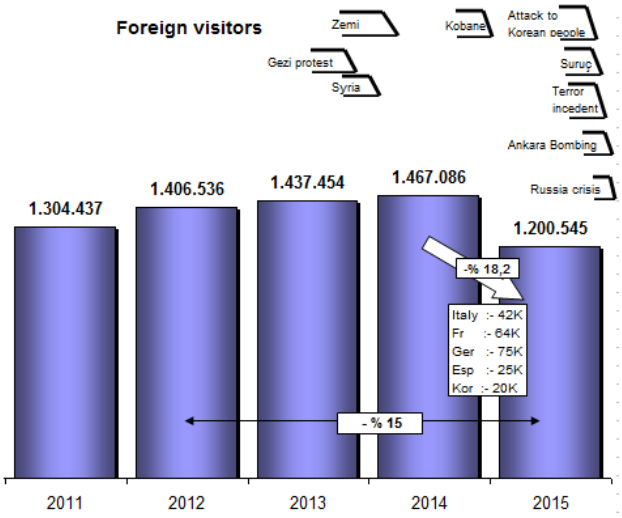
(2009, 753-769) find that relative prices and real income are the main determinants of domestic tourism in the regions of UK and Spain, respectively.

The rest of paper is organized as follows: This chapter continues to give information about the visitor statistics of Cappadocia, possible affects of visitor profile change and the axis shifting based losses. In Chapter 2, an application is presented via introducing problem definition and data. Results are presented in chapter 3. Final chapter summarizes the findings and then concludes.

1.3. Visitor Statistics

In 2015, totally 1.2 million foreign visitors accommodated in Nevsehir city. The data is obtained via AIS (Accommodation information system). Decrease of foreign visitor is 15% in 2015 compared to 2012 (Figure 2). This means that 18,2% decline compared to previous year. The incidents that happened at the second part of 2015 had an important effect on this decrease. Most declines are in France (-73%), Italia (-69%), Germany (-35%), Spain (-36%) and S. Korea markets in 2015. Japanese visitors also reduced 45%. S. Korea, which had a significant increment in previous year, also decreased 21%. UK and USA markets also reduced 35% and 14% respectively.

Figure 2: Number of foreign visitor visited and stayed in Nevsehir (2010-2015)



The only countries that increased their share and number of visitors in Cappadocia were China (121%), India (11%) and Sweden (18%) in 2015. Number of local visitors also reduced 11% because of elections (2 times in 2015) and uncertainty.

Comparing to 2012, Cappadocia has lost 3 of 4 Japanese visitors as of 2015. France market decreased 85%. Since the second part of 2015 has lots of incidents, the reduction in this term is more severe. The reduction in August - December 2015 term comparing the same period in 2014 is; France (-84%), Germany (-33%), Hong Kong (-90%), Italy (-75%), Japan (-61%), Malaysia (-48%), Spain (-47%), USA (-25%), England (-47%) and Scandinavian countries (-27%). Total foreign visitor reduction is %40 for the last 5 months of 2015 comparing the same period of 2014.

When the reasons behind this reduction are analyzed subjectively and quantitatively, terror fear, Turkey's foreign policies, Syria problems, increase in Islamophobia, ISIS related Paris-Brussels-Ankara bombings and perception that Turkish government is supporting Islamic related terror on western countries (including Japan, S. Korea and other developed countries) seem major factors.

Here, it will be given few interview examples that was done with Australia, Japan and USA visitors. One of Australian visitors that came Cappadocia explains that "One of the main root cause of that problems are because of Turkish government's foreign policy like weapon support to Syria. In Australia, lots of publication announced this news as heading since there is no active agenda in Australia. Our internal agenda is immigrants which is 1000 people per year and marriage of transsexuals". The other Japanese guest commented the current situation as “In Japan, people started to get afraid of religious related terror. When something happens like terrorist incident, most Japanese avoid the place or where possible to happen. Maybe not only Japanese, but most Japanese are fluttering to a large number. I think German and French are more independent of their own thinking each person. American are fluttering to political issue. Now we have big wave of racism in Japan. We Japanese are too simple thinking, someone who is Muslim kill someone, then Japanese may say Muslim is bad and danger. Never try to understand their religion or customs. When Chinese or Korean in Japan did incident, Japanese say "Go out from Japan”, even our ancestors took their ancestors out from their country to Japan. And never think about us Japanese have more criminal than them. So,

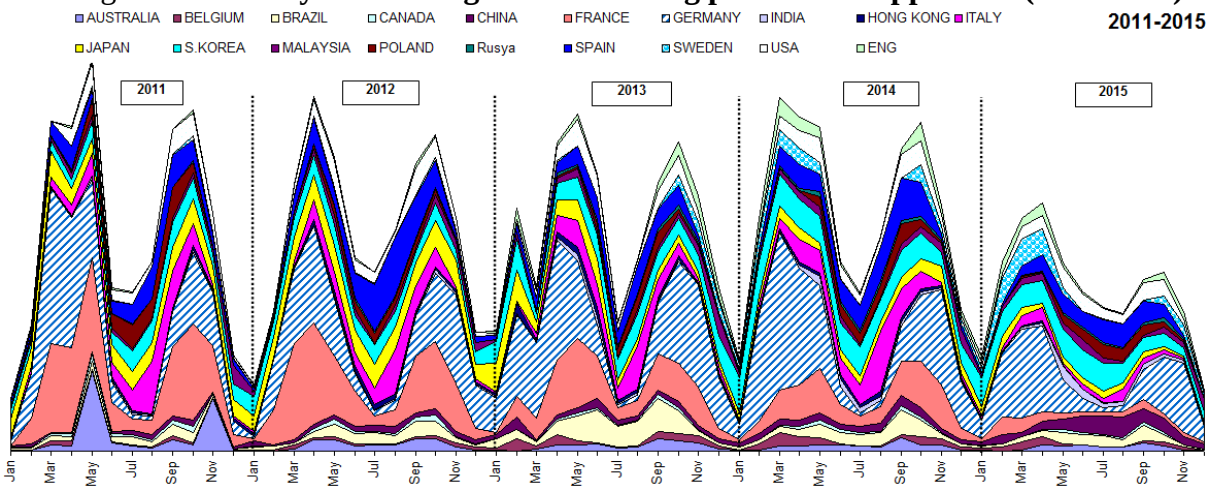
Japanese visitors going to only peaceful place. Now, Japanese travel agencies says Turkey is dangerous place".

One of the guest from USA commented the current situation that "Turkey's position on terror incident is confusing. Boo, hiss and chanting phrases such as "Allahu akbar" on a moment of silence for the people who lost their lives in the terrorist attacks in Paris was disappointment. A similar incident took place in October as a moment of silence for the victims of the bombings in Ankara, Turkey, was met with jeers. This is barbaric and disgusting"

1.4. What might this picture threaten?

Reisinger (2005, 212-225) claims that socio-cultural and terrorism risks are two main criteria on travelers' destination choice. Heung et al. (2001, 259-269) found that safety appeared to be the top priority for both Hong Kong and Taiwan travelers. Middleton (1994, 80, 105) also presented that safety is a major concern for visitors. As can be seen in figure 2, social and regional incidents (terrorism, Gezi protests, etc.) affected Turkey tourism sector deeply after 2013. When the picture is analyzed in detail, it can be obviously concluded that visitors from European Union (EU) reduced dramatically. One of the major affect of this problem will be the reduction on revenues of tourism sector in Cappadocia. Since this profile has most spenders in international tourism based on world tourism organization report (2014), the affect of this reduction will be serious.

Figure 3: **Monthly basis foreign visitor visiting pattern in Cappadocia (2011-2015)**



As can be seen in figure 3, the high seasons of Cappadocia are March - May and September - October months. So, the seasons will change, and this sinusoid wave will disappear. This

affect can be seen on figure 3 for the 2015 year. Since current sinusoid wave is not valid for Turkish visitors, seasons will change severely. This will affect the investors' payment plans also.

The other economical effect will be seen on shopkeepers, industry, retail and related areas. Different than other specific sectors, tourism industry has relations and commercial trading with more than 50 other sectors/sub-sectors. This will also cause recession in whole economy. Since 7% of total employment is in tourism sector (based on SGK reports in 2013), unemployment will increase. In addition, fringe benefit will reduce because of that the visitor profile is changing from most spenders to low spenders. Due to these changes, product diversity will also change. For instance, Chinese visitors are interested in ATV tours, horse riding or similar action based activities while USA, Australia, Canada or EU market are balloon riding, trekking or core cultural activities (traditions, cooking classes, stories etc).

While the number of visitors from EU countries, Canada, USA, England, Australia and other developed countries are decreasing, visitors from China, India, middle east countries (such as Saudi Arabia, Kuwait, Lebanon) are increasing. Demographical change will affect products, service, marketing mix and instruments.

Based on the report of Turkey Small Hotel Association/Cappadocia (2015), the customer satisfaction is very high with regards to Barcelona or St. Petersburg which are also compete in cultural tourism area. Since the service quality and customer satisfaction is very high in Cappadocia, it has big potential to host lots of countries in the world. This is also proven for the last 5 years. Cappadocia host visitors from more than 120 different countries in a month. However, the image or perception is changing from "oriental" towards to "middle east". This perception will be a barrier on west countries. Potential visitors will hesitate to come Turkey. So, number of countries visiting Turkey will reduce (or the number of visitors coming from these countries) and this means that risk will increase, and market diversity will decrease. The other risky point is France and Germany markets. The years between 2011-2014, 40% of visitors were from these 2 countries. In 2015, this ratio reduced %22 and continue to decrease. In 2012, France had 16,8% market share. This ratio also reduced 3,2% in 2015.

UNWTO (2014) reports that international tourism growth reached 4,4% and 1,135 million visitors crossed the international borders. The Americas (+8%) Asia and pacific (+5%) and

Middle East (+5%) registered the strongest growth, while Europe (+3%) and Africa (+2%) grew at a slightly more modest pace.

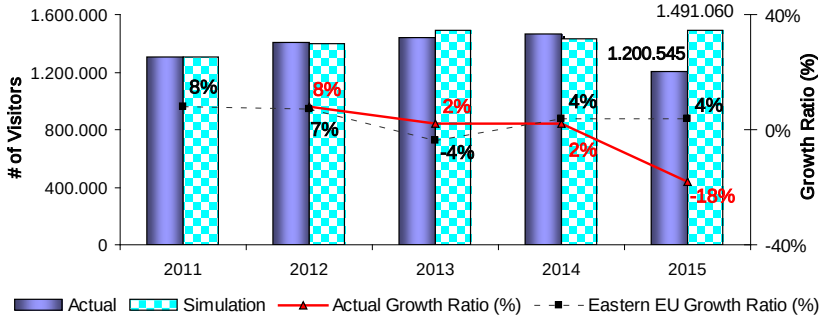
UNWTO (2015) forecasts international tourism to grow by 3% to 4% for 2015. By region, growth is expected to be strongest in Asia and Pacific (+4% to +5%) and Americas (+4% to +5%) followed by Europe (+3% to +4%), Africa (+3% to +5) and Middle East (+2% to +5%). The growth ratio of regions is summarized in table 2.

Table 2: **International growth of regions**

Regions / Years	Asia Pacific	America	Eastern Europe	Europe
2010	+13%	+6%	+5%	+3%
2011	+ 6%	+ 4%	+ 8%	+ 6%
2012	+ 7%		+ 7%	+ 3%
2013	+ 6%		- 4%	+ 5%
2014	+ 5%	+ 8%	+ 5%	+ 3%

A very simple simulation which assumes that yearly international tourism growth ratio of Cappadocia is same as Eastern Europe growth ratio presents that totally 1.491.060 foreign visitors would visit Cappadocia in 2012 (Figure 4.) However, the realization was 1.25 million which is %24,2 below the expectation. The gap (290.515 visitors) means that Cappadocia would have 2,7 more high season months (in average 108.000 foreign visitors stayed in Cappadocia between the years 2011-2014 in September or October - high seasons).

Figure 4: **Simulation vs. actual comparison of foreign visitors accommodated in Cappadocia**



2. EMPIRICAL FINDINGS

2.1. Problems

Although the number of visitors stayed in Cappadocia data is reporting via ADS (Accommodation data system) by Nevsehir Municipality Culture and Tourism Directorship, the data is not transformed to information and not used efficiently. In line with marketing science, information has key role on segmentation, positioning and target markets. So, the problems on this case is determined as lack of analysis of number of foreign visitors coming Cappadocia timely (monthly of yearly) basis.

2.1.1 Effect of the Problem

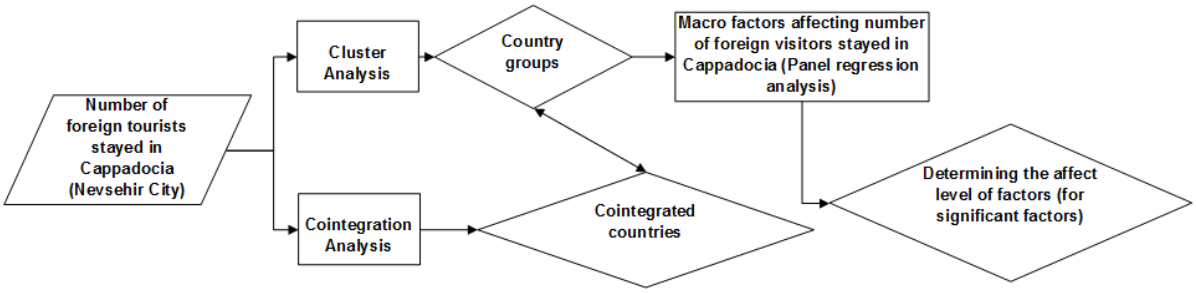
Since the measurement has a key role on management, the effects of this problem for Cappadocia are summarized as;

* No or wrong marketing mix determination,
* Weak marketing strategy planning,
* No target markets or checking the targets,
* Weak destination management,
* No ability to take countermeasures.

2.2 Methodology

3 different methodologies were used in this study to figure out the current situation and change of foreign visitor profile in Cappadocia. First, cluster analysis was applied for objective classification. Then the cointegration analysis was applied to present the long-term relationship among visitors came from different countries. Finally, the panel regression models were applied to determine the factors (and their affects level) that affect visitors' Cappadocia travel. Conceptual framework of the study can be seen in figure 5.

Figure 5: **Conceptual model framework of the study**



2.3 Data

Data of this research are observed via different resources. Number of visitors accommodate in Cappadocia data is observed via ADS (Accommodation data system) which compiles the visitor accommodations in hotels in Cappadocia. Humanity development index (HDI), global peace index (GPI), GDP and unemployment statistics are obtained via www.hdr.undp.org, www.visionofhumanity.org, TUIK (Turkish Statistical Institute) web page respectively.

2.4 Aim of the Study

Aim of this research is to figure out the realities behind the numbers which present the number of foreign visitors coming from more than 150 countries to Cappadocia and find the root causes of that decrease/increase. In line with this main objective, guest countries affected each other or follow the same patterns will be introduced and dynamic behaviors will be presented. By the way, guest profiles will be revealed to segment market and produce different products/services to related segments.

3. FINDINGS

3.1 Results of Cluster Analysis

At this step, based on the accommodation statistics of the guests from different countries are grouped by using cluster analysis. Since cluster analysis is an efficient multi variable statistical method on grouping data based on similarities, one of the main research question of this research is responded via using agglomerative hierarchical clustering or non-hierarchical clustering (K-means clustering) methods. The results of the two different methods will be compared and commented.

Number of visitors from 20 countries that accommodated in Nevsehir is defined as a cluster variable. Although there are visitors from more than 100 countries staying in Nevsehir each month, the most accommodated 20 countries are chosen as dependent variables in this study. Totally 1260 observations analyzed in 60 periods. Data obtained from Nevsehir Municipality Culture and Tourism Directorship. Monthly basis data from 2011 to 2015 is (60 periods) investigated dynamically.

Before making analysis, the correlation coefficients are also examined (Table 4). Since the spearman correlation coefficients cannot consider the stationary on time series analysis, table 4 cannot explain the relationship between countries first. While working with non-stationary series, series' mean, and variance can get closer to infinite while the observation values go infinite. So, classical tests can not response and be unreliable.

Agglomerative hierarchical clustering results in 8 clusters show that there are 4 main groups: Turkey, France, Germany and others in terms of cluster 4. It is obvious that Turkey behaves totally different in each cluster. If the analysis goes in detail, cluster 7 is responding obviously in terms of detail group behavior (Table 3). In this stage, overseas countries except Poland, is in one group (Australia, Brazil and USA). In second group, far east and Scandinavian countries is together with Belgium, Canada, Russia, England and Sweden. In third group, Mediterranean countries appear in. Japan and S. Korea is in another group. Their behavior is parallel in this stage. Surprisingly, behavior of France and Germany are totally separate and different as Turkey. This might be because of seasonal affect (holiday patterns, annual leave usage addictions etc.) and mass tourism. They generally prefer to come Cappadocia via tourism agencies and at the beginning of spring (Figure 6). The results of hierarchical clustering cluster analysis can be evaluated and reasons behind this table may be analyzed in detail.

Figure 6: **Country basis Cappadocia visitors' accommodation statistics in 2011-2015 term**

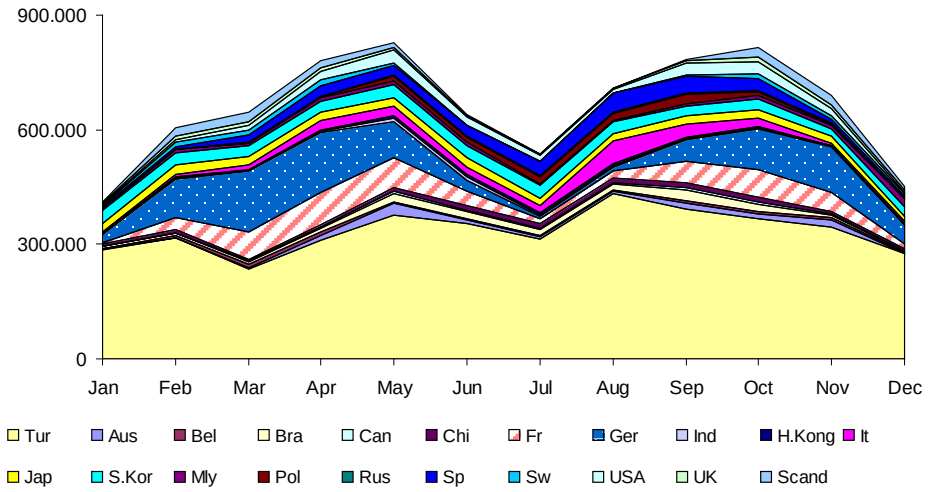
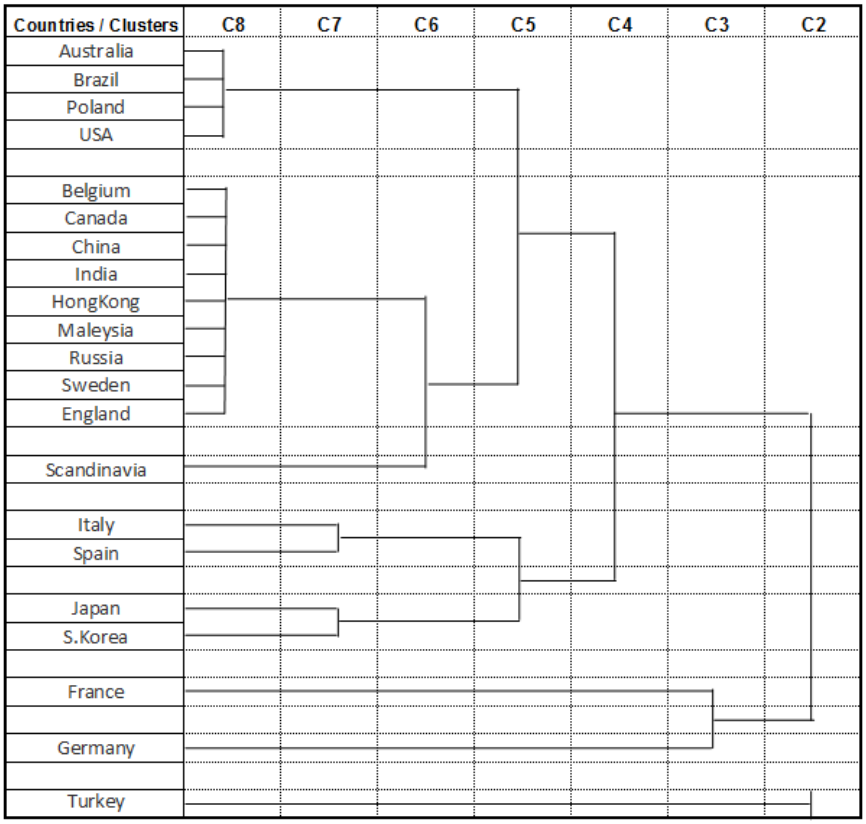


Table 3: **Dendrogram (agglomerative hierarchical clustering method)**



Results obtained via non-hierarchical clustering (K-means clustering) method have some similarities with the results of hierarchical clustering analysis (Table 4). Turkey, Germany, France and Mediterranean countries (Spain and Italy) behave as separate groups too. However, USA and Brazil join the Far East countries, S. Korea and Japan. One of the basic differences is that Canada, India, Hong Kong and Russia left the big group and passed the 1st group. In hierarchical cluster analysis, these 2 big groups also got together at stage cluster 5.

Table 4: **Non-hierarchical clustering analysis results**

1st Grp	2nd Grp	3rd Grp	4th Grp	5th Grp	6th Grp	7th Grp
Aust	Belg	Tur	Isp	S.Kor	Fr	Ger
Can	Chi		Ita	Jap		
Ind	Mly			USA		
H.Kong	Swe			Brz		
Pol	Eng					
Rus	Scand.					

Table 5: **Correlation coefficient of countries accommodated in Nevsehir/Cappadocia**

C.Coeff	Bel	Bra	Can *	Chi	Fra *	Ger	Ind	H. Kong *	It	Jap *	S.Kor	Maly	Pol	Rus	Sp	Swe	USA	Eng	Turkey
Austr	-1,0%	10,4%	50,1%	-14,3%	42,1%	11,9%	4,3%	-10,2%	16,0%	9,0%	-12,9%	1,7%	25,2%	2,2%	8,9%	-9,3%	46,1%	-7,6%	-2,5%
Belg		8,1%	6,1%	0,2%	22,4%	78,2%	-2,2%	25,1%	-9,5%	-3,6%	22,7%	12,4%	-24,1%	16,9%	-7,7%	58,1%	20,9%	77,4%	0,7%
Braz			47,4%	22,8%	15,3%	-11,0%	44,7%	52,3%	47,1%	4,2%	21,9%	-19,3%	45,7%	63,4%	49,3%	-19,2%	57,2%	5,3%	54,6%
Can *				6,2%	63,5%	15,0%	34,9%	10,7%	45,9%	22,5%	2,3%	-2,4%	54,1%	35,9%	46,0%	-11,0%	80,6%	1,8%	20,1%
Chi					-36,1%	-23,3%	48,4%	0,7%	-1,4%	-36,2%	33,5%	-7,0%	23,4%	34,8%	23,7%	4,7%	16,2%	13,1%	40,7%
Fra *						56,0%	-1,8%	14,8%	23,1%	53,9%	-19,8%	6,0%	8,3%	3,1%	18,5%	-11,5%	53,5%	-2,8%	-1,0%
Ger							-9,5%	4,2%	-18,5%	11,4%	-6,9%	17,1%	-41,7%	-1,6%	-19,2%	46,3%	19,8%	56,3%	-17,0%
Ind								18,9%	13,4%	-25,2%	34,6%	10,9%	28,4%	56,3%	21,4%	-3,2%	53,5%	5,2%	42,3%
H. Kng *									33,8%	42,5%	28,9%	8,1%	-0,9%	29,7%	28,4%	-14,8%	22,1%	11,6%	38,9%
It										14,9%	17,0%	-23,5%	62,4%	38,5%	74,4%	-17,9%	34,2%	-13,8%	34,9%
Jap *											-21,0%	-9,0%	0,0%	-19,0%	18,2%	-41,0%	11,8%	-33,4%	3,8%
S.Kor												-1,9%	18,6%	15,2%	12,6%	30,6%	8,4%	37,0%	17,9%
Maly													-30,6%	-12,7%	-28,3%	15,8%	2,1%	18,9%	-5,9%
Pol														32,4%	57,3%	-31,6%	44,7%	-26,5%	23,1%
Rus															48,7%	3,5%	51,6%	22,6%	55,8%
Spa																-19,5%	45,7%	-7,8%	40,7%
Swe																	3,6%	78,9%	-12,0%
USA																		17,5%	35,1%
Eng																			5,9%

* Countries have unit root and non-stationary (Correlation coefficients do not present rational value/relationship in long run)

3.2. Cointegration Test Results

The cointegration analysis is a concept for modeling equilibrium to figure out long run relations of economic variables. Before applying Engle-Granger two step cointegration approaches, Augmented Dickey Fuller (ADF) test is realized to test the stationary status of variables. Time series variables must be checked whether they are stationary or not. Stationary series means that one with a mean value which will not vary with the sampling period. Cointegration analysis is used to test and estimate cointegration relations between only non-stationary time series variables. Results are observed via E-views statistical analysis program and show that only 4 countries - Canada, France, Hong Kong and Japan - data have unit roots based on McKinnon critical values. So, the test for unite root was repeated for these countries in 1st difference. The results showed that they are stationary in first difference at 95% significance level. Than, the cointegration analysis can be done to analyze the cointegrated relationship between series.

To figure out the long-term relationship among visitors coming from different countries, Engle-Granger two step cointegration approach was used. In this test, related series were analyzed in I (0) level and estimated via least squares method. By the way, stationary situation of error terms is analyzed. If the error terms are stationary in I (0) level, then these two series have relationship in long term. To estimate the cointegration model first, we need to run our level variables and generate the regression between dependent variable and independent variables. Then the residuals are generated and checked if they are stationary or not. In our case, 4 countries' visitor series have unit root and non-stationary. So, correlation coefficients do not present the long run relationship for these countries. The relationship among these countries are measured via Engle-Granger two step cointegration approach. Relationships among other 17 countries are measured via Spearman correlation coefficient.

Table 6: **Results of Augmented Dickey-Fuller test**

Countries	**Prob.**			
	Can	**Fra**	**H. Kong**	**Jap**
Can		0,000	0,000	0,000
Fra			0,000	0,000
H. Kong				0,000
Jap				

The results of Engle-Granger two step cointegration approach and Augmented Dickey-Fuller test shows that (table 6), countries have relationship in long run since all the probabilities level is below %5.

If the obtained results are compared with results of the cluster analysis, Hong Kong and Canada is at the same cluster (at cluster level 8). However, behavior of France is completely different. Japan is joining Canada and Hong Kong is cluster level 4 in terms of hierarchical clustering method. Similar results are valid for non-hierarchical clustering analysis methodology too.

In terms of Spearman correlation coefficients for stationary series, based on the Evans (1996) suggestions for the absolute value of r in table 7; USA has moderate positive correlation with different countries from east to South America and Europe. Belgium has strong relationship with neighbor countries, Germany and England. Brazil has many moderate relationships with countries from east, Europe and Turkey. Strong relationship between Brazil and Russia is an interesting finding. China which has dramatically increasing trend in Cappadocia has moderate relationship with India and Turkey for the last 5 years. Germany has moderate relations with other EU countries. Italy is in strong relation with two EU countries, Poland and Spain. Other strong relationship is observed among Sweden-England and England-Scandinavian countries. South Korea and Malaysia have weak and very weak correlation with other countries. Their patterns are not in line with any other countries.

Table 7: **Strong and moderate correlation coefficients**

Countries	Ger	Ind	It	Pol	Rus	Spa	Swe	USA	Eng	Tur	Scand
Aus								Mod			
Bel	Str						Mod		Str		
Bra		Mod	Mod	Mod	Str	Mod		Mod		Mod	
Chi		Mod								Mod	
Ger				Mod			Mod		Mod		Mod
Ind					Mod			Mod		Mod	
It				Str		Str					
Pol						Mod		Mod			
Rus						Mod		Mod		Mod	
Spa								Mod			
Swe									Str		
Eng											Str

3.3. Panel Regression Model Results

Before running the model, an assumption for multiple regressions are tested. Panel regression model use the basic assumptions of multiple regression analysis. It has several key assumptions. First it needs at least 3 variables of metric (ratio or interval) scale. In this concept, our model has 4 independent variables. In terms of sample size, regression analysis generally requires at least 5 and ideally 20 cases per independent variable. Since there are 20 countries and 5 years term in this research, volume is appropriate for regression analysis.

The other assumption is that multiple linear regression models needs the relationship between independent and dependent variables to be linear. Durbin-Watson test statistics are checked, and it is 2,211. This means that the residuals are independent. The other assumption of multiple linear regression is that there is little or no multicollinearity in the data. When the colinearity statistics checked, none of the independent variables have correlated each other since the colinearity statistics are below 0,9. And colinearity diagnostics results show that variables do not have multicollinearity or singularity.

The other assumption of multiple linear regression analysis is homoscedasticity. Although it can be analyzed via checking scatter plots, it is not so informative. So, Breusch-Pagan test and Koenker test for Heteroscedasticity are applied by adding macro on SPSS. The Chi-Square scores of the tests are 90,085 and 14,217 respectively. And the significance levels of that score are 0 and 0, 0066 respectively. This means that the null hypothesis is rejected, and the variance of errors differs at different values of the independent variable. Berry and Feldman (1985, 73-85) and Tabachnick and Fidell (1996) claim that slight heteroscedasticity has little effect on significance tests. On the other hand, it can lead to serious distortion of findings and weaken the analysis seriously. This might cause the over-estimation error. Finally, the ANOVA results show that the entire model is significant since the F value of the model is 0,045.

To determine the factors affecting country based number of visitors, the panel regression analysis is implemented. Yearly basis numbers of visitors from 20 different countries are determined as dependent variable. Macroeconomics/demographic variables are determined as independent variables: GDP growth ratio, HDI, GPI and unemployment ratio. Although there

are significant findings that economical crisis/situations do not affect cultural tourism seriously, situation in Cappadocia is measured via macro variables.

With panel time series data, the most common models are random effects and fixed effects models in regression analysis. The dynamic panel regression techniques used in this study includes random effects (RE) and the fixed effects (FE) models. Apart from capturing the dynamic relationship among the variables of interest, the generalized method of moments (GMM) estimator would also overcome the endogeneity problem. Based on the problem mentioned above, our dependent variable is number of visitors coming Cappadocia monthly basis. And the independent variables are GDP, GPI, HDI and UNEMP. The dynamic version of panel regression model can be expressed as follows:

$$NT_{i,t} = \alpha_i + \delta_1 GDP_{i,t} + \delta_2 GPI_{i,t} + \delta_3 HDI_{i,t} + \delta_4 UNEMP_{i,t} + u_{i,t}$$

Here $NT_{i,t}$ is the number of visitor comes from country i in year t. α_i is the unknown intercept for each entity. So, it is country-specific effect which is distributed independently and constant over the countries. $GDP_{i,t}$, $GPI_{i,t}$, $HDI_{i,t}$ and $UNEMP_{i,t}$ are the independent variables of country i in period t respectively. $u_{i,t}$ is the error term assumed to be distributed independently in all time periods of the country i. Since there are 20 countries and 60 periods, countries are i=1, 2, 3....20 and periods are t=1, 2, 3...60.

First, the model is solved via fixed affects techniques in E-views program (See the details of fixed and random affect models on Baltagi, (2008, 12-18). Model is established based on panel dataset formation. Fixed effect results show that the only GDP is statistical significant explanatory on NT (Table 8).

On the other hand, to determine which model (fixed or random affect models) is suitable, random affect technique must also be implemented. In table 9, the random affect model results are seen. Based on the results, again GDP is the only significant variable on TUR. However, it might be because of multicollinearity problem.

Table 8: **Panel regression model result based on random affect**

Variables	Fixed Affect			Random Effect		
	Coeff.	**t-stat**	**Prob**	**Coeff.**	**t-stat**	**Prob**
C	-37.914	-0,0446	0,96	269.229	0,6	0,54
GDP	-6.198	-2.512.440	0,01	-6.107.681	-2.586.108	0,01
GPI	-15.228	-0,2187	0,82	20.906	0,3607	0,71
HDI	235.976	0,2349	0,81	-214.890	-0,4566	0,64
UNEMP	-5.821.705	-1.444.807	0,15	-4.391.320	-1.196.838	0,23
R-Squared	0.973562					
Adjusted R-squared	0.965561					
Durbin-Watson stat	2.019.610					

In order to determine which model is appropriate, Hausman test is implemented. The test evaluates the consistency of an estimator when compared to an alternative, less efficient, estimator which is already known to be consistent (Greene, 2012, 234). Based on the results, since the probability values is more then 5%, then the null hypothesis is accepted. So, the random affect model is the most appropriate model.

4. CONCLUSION

Measurement is the foundation stone of decision making and management. As soon as you measure, systems can be managed, and decision maker can give right decisions. On the other hand, in case you measure, you can see the problems and the gaps. In line with these inferences, visitor data analysis in destinations has crucial role on problem solving and developing. Results also give decision makers critical information about marketing mix and marketing management.

Visitor profile of Cappadocia changed severely after 2014. In 2011-2015 term, 4 main visitor groups are observed; Turkey, France, Germany and others. On the other hand, Italy and Spain is another small group which stands in another group This might be because of seasonal similarities or mass tourism addiction of visitors in related countries.

For long term perspective, Canada, Hong Kong, France and Japan had long term relationship. So, this can be summarized that these countries' responses to the incidents are similar between the years 2011-2015. Although it can not be concluded in long term, the moderate relationship is observed among European countries in terms of visiting patterns for Cappadocia. Among the 4 different macro variables, only the GDP is an explanatory variable in terms of Cappadocia choice of visitors. However, heteroscedasticity which means that the variance of

errors differs at different values of the independent variable might be the reason of this result and over-estimation error.

For further studies, panel regression analysis can be done considering the incidents (terror attacks, Russian airplane crisis, social incidents etc. showed in this study) and their affects on number of foreign visitors. And, discriminant analysis can be done to determine which factors are distinguishing while classifying the visitor groups. This study can be remade via using different macro-micro or social-cultural variables to measure the effects of them on tourism.

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