The impact of transport infrastructure on tourism destination attractiveness: A case study of Marrakesh City, Morocco

Prof. Dr. Ouafae Zerouali Ouariti
Head of the ERETTLOG Laboratory
National School of Business and Management of Agadir
Ibn Zohr University
Street Hachtouka - Hay Salam, BP: 37 / S - Agadir - Morocco

El Mehdi Jebrane* (PhD Student)
ERETTLOG Laboratory
National School of Business and Management of Agadir
Ibn Zohr University
Street Hachtouka - Hay Salam, BP: 37 / S - Agadir - Morocco
E-mail : mehdijebrane@gmail.com

Corresponding author*

Abstract

Tourism activity is fundamentally based on two parameters known as the intention to move and the physical ability to do so. The first parameter is based on setting a desire for places, which inspires an aspiration to travel, and time availability and money will make it possible. The second parameter implies the ability to access places visited through the use of transport and information. Hence the importance of developing the transport infrastructure in order to promote tourism destination attractiveness and competitiveness. The aim of this article addresses this idea by examining bibliographically the evidence of a connection between transport and tourism and empirically through a case study that tries to identify the impact of transport development on tourism destination attractiveness in the Moroccan city of Marrakesh during the last 18 years using the linear regression and the Pearson correlation methods. Based on the findings, we concluded that transport and tourism are connected in a way that, through developing transport infrastructures such as highways, airports, and railway station, a positive impact on overnights stays in all types of accommodation can be noticed. Moreover, this outcome regarding a city in the North African and Middle Eastern context joins the other findings in the literature confirming the connection between transport infrastructure development and tourism destination attractiveness. Therefore, this study tries to incite African governments in general and Moroccan policymakers in particular to have a clear focus on long-term planning and requirements concerning tourism development. They should furthermore, develop and integrated a competitive transport system that is sustainable socially and economically.

Keywords: Tourism, transport, destination attractiveness, infrastructure, Marrakech.

Introduction

Tourism usually evokes holidays, relaxation, pleasure, and all the fun aspects related to it (Ouariti & Hamri, 2014), and it is a phenomenon that contains two essential components, that is, an origin and a destination (Brown et al., 2014). Tourists or tourism demands symbolize the origin, and the second one represents the tourism supply (Formica & Uysal, 2006). The two components together shape the tourism system, which is the result of demand and supply interaction (Gunn, 1994). In particular, demand analysis may focus on the tourist and his/her characteristics, while the supply side relates to the attractions and attributes of the tourism product (Ritchie & Crouch, 2003). Thus,

to apprehend the attractiveness of a tourist destination, it is essential to analyse the elements of its offer (El Hafid et al., 2018). Moreover, when it comes to these elements and their impact on destination attractiveness some researchers (Chew, 1987; Gunn, 1988; Inskeep, 1991; Martin & Witt, 1988) have frequently contended that the infrastructure capacity of a nation is a determinant of the attractiveness of a travel destination. Specifically, transport infrastructure, which gives the fundamental base to transport services, is thus an essential determinant in this regard (Vengesayi et al., 2009).

Furthermore, Kaul (1985) perceives the role of the transport performance as an essential part of well-off tourism development and states that "transport plays an important role in the successful creation and development of new attractions as well as the healthy growth of existing ones." Thus, the supply of reasonable transport has changed dead centres of traveller interest into dynamic and prosperous spots drawing in large numbers of individuals (Rodrigue & Notteboom, 2017). Similarly, the idea of transport supply as a precondition for tourism development has also been posited by Chew (1987), Abeyratne (1993), and Prideaux (2000). Nevertheless, numerous authors recognize the requirement for productive transport as a universal component in a successful program of tourism development and management (Adeola et al., 2018). However, little work has been embraced to explore the importance of enhanced transport infrastructure as a determinant in destination attractiveness and competitiveness. Furthermore, empirical evidence is rarely found in the African and Middle Eastern context.

The twofold purpose of this paper is to produce empirical evidence toward the connection between transport infrastructure development and tourism destination attractiveness. To some extent, this case study examines this connection by demonstrating this connection via statistical research on the case of the Moroccan city of Marrakesh using the linear regression and the Pearson correlation methods. Hence, making it possible to illustrate the dependence between these two variables (tourist attractiveness and transport infrastructure development). The findings from this case study point to the need for African governments and policymakers to support the development of competitive transport infrastructure in their policies. In order to reposition the continent to benefit from a highly competitive global tourism market.

The remainder of this paper is ordered as follows: the next section introduces the literature review through: tourist and destination attractiveness, tourism infrastructure, transport infrastructure and empirical evidences of transport infrastructure impact on tourism destination attractiveness. Afterward, section 3 debates the methodology. Section 4 presents the case study area, while section 5 discusses the main findings. Finally section 6 ends this paper with the conclusion and the research perspectives.

Literature Review

Determinants of Tourists Destination Attractiveness

In the last 40 years, tourism researchers have tried many ways to explore the various dimensions of destination competitiveness and attractiveness (Ivanov and Webster, 2013), nevertheless one popular way of which is to examine the attributes associated with the destination (An et al., 2019). Finding its origin in the Latin verb "*atrathere*," meaning to attract (Gunn, 1987), the notion of destination attractiveness has been first conceptualized by Mayo and Jarvis (1981) through a study that associates it to the traveller's decision-making process and the particular benefits derived by travellers. Indeed, the beliefs, feelings, and opinions that individuals have about a touristic destination's perceived ability to satisfy their special vacation needs are usually exhibited by the attractiveness of the destination.

Thus, it has been defined explicitly by Mayo and Jarvis (1981) as the relative value of individual benefits and the looked ability of the destination to fulfil these specific benefits. Reasonably, the more a tourist believes a travel destination will satisfy his vacation need, the more attractive the destination will be, and the more likely it will be visited (Jiang et al., 2016). This ability is increased by the specific attributes and characteristics of a destination, such as attractions, infrastructure, or services (Vengesayi et al., 2009). Furthermore, Van Raaij (1986) saw a tourism destination as an assortment of attributes that are notably "given" and partly "man-made." In the "given" part, there are several natural features of a tourism destination, like the climate, scenery, beaches, mountains, historic-cultural buildings (Heung et al., 2001). In the "man-made" part, there exist characteristics like hotel and transport infrastructure, package tours, and equipment for sports and entertainment, which can be adjusted to customer preferences, subject to budget limitations.

Additionally, according to Lew (1987), those characteristics incorporate elements of a "non-home" place that brings discretionary tourists away from their homes. Similarly, Hu and Ritchie (1993) confirmed that a tourism destination is, therefore, a combination of destination attributes, mostly tourist facilities and services. Furthermore, Laws (1995) classified this destination attributes into two major categories:

- The primary category includes innate characteristics such as natural resources historical architecture climate ecology and culture.
- The secondary characteristics are those developments introduced mainly for tourists such as hotels catering transport activities and entertainment.

He additionally alleged that the prime purpose of tourists is to enjoy the original attributes rather than the others. Nevertheless, the secondary attributes are essential to strengthen the attractiveness of the destination. Likewise, Dann (1997) perceived these attributes as the "pull factors" that lead an individual to choose one destination over another once the traveling decision has been made. Kim (1998) also listed several other factors affecting the attractiveness of a destination such as "a clean and peaceful environment, quality of accommodation, facilities family-oriented amenities, safety, accessibility, reputation, entertainment, and recreational opportunities." Finally, Genest and Legg (2003) tried to apprehend the significant determinants of destination attractiveness by identifying the three dimensions of attractiveness that affords a quality tourist product and experience: product, performance, and futurity.

As is evident from this analysis, the attractiveness of a destination is determined by its unique attributes. The significance of these characteristics helps people to value the attractiveness of a destination and make destination choices. The more a destination can fulfil the needs of its visitors, the more it is seen to be attractive, and the higher the chances that it will be picked as the final destination. The influence of destination attractiveness is not limited to the stage of selecting the destination, but also affects the behaviour of tourists in general. Also, it is noted that destination attractiveness is the most significant predictor of revisit intention (Kozak & Rimmington, 1998; Sparks, 2007; Um, Chon, & Ro, 2006). In other words, the further captivated the visitors are with the destination, the higher the visitation frequency is expected. Similarly, Kozak and Baloglu (2010) carried a study of the impact of destination attributes on the frequency of visitors, and their intention to return. Hence, they illustrated the strengths and weaknesses of a destination by evaluating its attractiveness level defined by the elements presented in (Figure 1). Conclusively, as might be expected, in the absence of destination attractiveness, tourism would not exist, and therefore it could be little or need for tourist facilities and services (Kim, Lee, 2002).

Figure 1. Components of Destination Attractiveness.

Natural Factors
- Natural Beauty
- Climate

Social Factors
- Artistic and Architectural Features
- Festivals
- Distinctive Local Features

Historical Factors
- Attitude towards Tourists
- Native Historical Settlements
- Religious Significance
- Historical Significance

Recreation & Shopping Facilities
- Sport Facilities
- Edicational Facilities
- Facilities conductive to health, rest and tranquility
- Night-time recreation
- Shopping Facilities

Infrastructure Food & Shelter
- Infrastructure above Minimal Touristic Quality
- Food and Lodging Facilities above Minimal Touristic Quality

Price
- Level of prices

Government Policies
- Entry barriers

Adapted from Kozak and Seyhmus (2011). Managing and Marketing Tourist Destinations: Strategies to Gain a Competitive Edge, 2010.
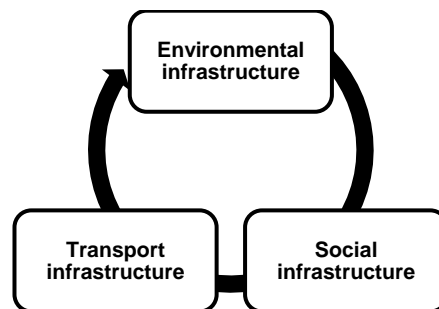
Tourism Infrastructure

Tourism infrastructure is considered as the physical element that is designed and erected to cater to visitors (Jovanović & Ilić, 2016). The apparent relationship between tourism development and infrastructure has been theoretically confirmed by several authors (Adebayo & Iweka, 2014). For instance, Cholik (2017) explicitly stated that tourism infrastructure is considered the basis of tourism development, as well as a base for the utilization of destination resources. Furthermore, according to Jovanović and Ilić (2016), tourism infrastructure includes complimentary facilities, equipment, and necessary resources for the functioning of every tourist destination. Transport infrastructure mostly involves roads, railways, airports, along with others, which make a tourist destination accessible for tourists (Rodrigue et al., 2016). Likewise, Popesku and Pavlović (2013) through their study of the competitiveness of Serbia as a tourist destination stated that the primary

goal of tourism infrastructure is meeting the requirements of tourists, in the form of hotels, restaurants, and sports facilities, among others.

Also, Lovelock and Lovelock (2013) found that implementing and developing transport infrastructure highly contributes to the increasing complexity of the tourism phenomenon. So much so, that it affects the increase in functional complexity and territorial, destination, competitiveness. Without a doubt, literature gives various perspectives on the amount and type of units defining tourism infrastructure. However, the Tourism & Transport Forum (Figure 2) affirmed that tourism infrastructure is mainly "the supply chain of transport, social, and environmental infrastructure collaborating at a regional level to create an attractive tourism destination". Thus, the emphasis of tourism infrastructure is reflected in the fact that it can add to expanding the efficiency of distribution and production of tourism services and, at times, such distant destinations, even expand the supply of tourism services (Smith, 1994).

Figure 2. Types of tourism infrastructure

Source: Tourism & Transport Forum (TTF), (2012). Tourism Infrastructure Policy and Priorities.

In addition to this, literature often points to the classification of tourism infrastructure into four categories, namely: 1. Physical (Hotels, Motels, Restaurants, Transport, Communication, Water, Electricity); 2. Cultural (Culture, heritage, fairs and festivals, local art and music, dress and dance, Language and food); 3. Service (Banking facilities, Travel agencies, Insurance agencies, Tourist guides); 4. Governance (Law and order machinery, Customs and immigration) (Figure 3).

Figure 3. Components of tourism infrastructure
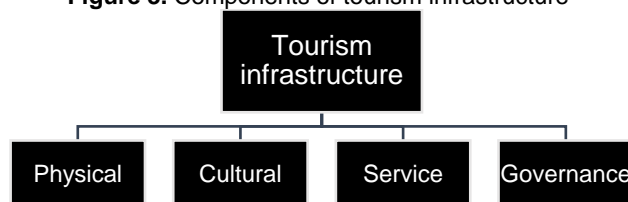
Adapted from: Raina, A., (2005). Ecology. Wildlife and Tourism Development: Principles, Practices and Strategies, pp. 192.

Transport Infrastructure

Several researchers have characterized the tourism product. Murphy, Pritchard and Smith (2000) relate it to demand and supply analysis and describe how various elements of the destination interact with tourists. Gunn (1988) describes the product as a complex consumptive experience that emerges from a process in which tourists use various services (recreation, accommodation, information, and transport). Smith (1994) recognizes the role of service infrastructure in building a product experience. He claims that service infrastructure is housed inside the wider macro-environment of the destination and that infrastructure and technology in a destination are essential

characteristics that can increase the experience. Crouch and Ritchie (1999) affirmed that tourism planning and development in the actual context of comparative and competitive advantage would not be achievable without roads, airports, harbours, electricity, sewage, and potable water.

Likewise, Kaul (1985) was amongst the first to recognize the effect of transport infrastructure as a crucial element of steady tourism development. He also added the creation of new attractions and the growth of existing ones. The Tourism Task Force (2003) of Australia affirms that transport plays a significant part in the equation since it is accountable for connecting tourism-generating regions to destinations, not to mention providing transport within the latter. Prideaux (2000) discusses that a destination should be easy to get to and accessible to get around. The majority of tourists, being citizens of developed countries, are habitual to modern and efficient transport infrastructure, and they demand to experience in the destination country comforts comparable to home (Cohen, 1979; Mo, Howard, & Havitz, 1993). Otherwise, they will attempt to try alternative and more suitable destinations.

Empirical Evidence of Transport Infrastructure Impact on Tourism attractiveness

Research evaluating the role of transport infrastructure in destination and tourism development is scarce. In numerous tourism studies, the connection between transport and tourism is established only in terms of accessibility, where transport is seen as a link connecting tourists and their desired destination regions. Some scholars have explored the history of tourism from the perspective of the development of various transport modes (Dickman, 1994), while others like Mill and Morrison (1985), among others, have taken an interdisciplinary perspective, perceiving transport as only one of numerous elements that constitute the tourism system. Models of tourism flows have also been developed, except with transport having a restricted role.

Lundgren (1982), for example, perceives transport from a geographic perspective and analyses tourism flows between metropolitan and rural destinations. Nevertheless, his model manages transport as a secondary element of the spatial hierarchy between rural and metropolitan destinations. Likewise another author reports the function of transport inside the background of the city as a "regional staging post from where visitors travel to other centres and resorts" (Pearce, 1981). In summary, these earlier studies, though recognizing the link between tourism and transport, fail to identify any specific causal connection.

The first type of studies are established on surveys, directed originally by Gearing et al., (1974) in the case of Turkey as a touristic destination. Accordingly, the authors noticed that infrastructure (comprising roads, water, electricity, safety services, health services, communications, and public transport) is a major determinant defining arrivals. Additionally, Tang and Rochananond (1990) assumed that infrastructure is an indispensable component in promoting Thailand as a destination country. Similarly, Kim Crompton and Botha (2000) for the case of Sun Lost City in South Africa, along with McElroy (2003) for the case of 51 Caribbean, Mediterranean, and Northern Pacific islands, highlighted the importance of infrastructure, particularly government-financed, in the success of a destination.

The second type of studies are founded on the estimation of an international tourism demand equation. Witt and Witt (1995), alongside Lim (1997), provide a comprehensive overview of the regression analysis, model specification, attributes, and proxies. As claimed by Seetanah et al., (2011), "income in the country of origin, the cost of travel, relative prices, exchange rate, tourism infrastructure, and the level of development in the destination country" are amongst the most usual determinants of arrivals in the literature. Most of studies models aggregate tourist numbers, thereby ignoring and not considering the effect of the country of origin, and the role of transport

infrastructure in destination development. Additionally, up to now the regression analysis has been intensely concentrated on developed country destinations. A current exception is Naudé and Saayman (2005), who studied the determinants of tourism flows in the case of African countries using a panel data regression approach. Thus, using cross-section ordinary least squares plus static and dynamic panel data estimation, these authors identified political stability, personal safety, marketing efforts, and available infrastructure as fundamental determinants as well as the typical classical factors in nearly all panel sets analysed, namely aggregate arrivals, arrivals from America, Europe, and Africa. Nevertheless, the measure of infrastructure used relates to tourism infrastructure exclusively.

An analysis of the role of transport infrastructure making use of panel regression analysis to clarify arrivals from different origin countries into less developed economies has up to this point been limited to the non-existent. This study tackles such an exercise as reported in this paper, supposing the findings to compose a valuable addition to the existing literature and to be of meaningful significance to less developed countries, most of which are based on the tourism sector for GDP significance.

Methodology

The case study is nowadays widely recognized as a research strategy in management sciences, and Stake (2005) argues that this methodology has become one of the most widely used methods for conducting qualitative studies and that several reference studies have helped to establish its legitimacy for instance (Eisenhardt 1989; Yin 1994; Yin 2003; Guba & Lincoln 1994). Thanks to the studies directed by these authors, they have highlighted the scientific interest and proposed specific investigation methods and techniques to improve the validity of the case study process.

The framework of this case study followed Yin precisely, and the research template he recommended that researchers base their case studies on the theories and previous studies on the subject (Yin, 2009). Indeed, such a case study research design includes: ''A 'why' and 'how' question'' (Yin, 2014). According to Yin's design, the existing theory is the starting point of case study research. Therefore, research questions were identified and shaped using literature that narrowed our interest in transport infrastructure and destination attractiveness, through the literature review presented in the first section of this article. Moreover, we identified the relationship between the concepts that shapes our study.

Accordingly, this case study was carried in a context where the competitiveness of transport infrastructure assumes an important role when deciding the destination of a tourist, coupled with other elements that influence the tourists attractiveness of Morocco. The method managed to carry out data collection and therefore met the proposed objectives, which were based on documentary research techniques. Additionally, we employed a quantitative focus that uses both the Pearson correlation coefficient and the linear regression model to analyse the impact of transport infrastructure development on touristic attractiveness in the city of Marrakesh statistically.

In order to do so, traffic transport statistics of Marrakesh, such as railway traffic, highway traffic, and airport traffic grouped into time series from 2000 to 2018, were collected from the High Commission for Planning, the National Office of Airports and the Ministry of Equipment, Transport, Logistics, and Water. Tourism indicators, and precisely the number of overnight stays in Marrakesh city's accommodation establishments, were obtained from the Moroccan tourism observatory. The choice of the latter as an indicator and not the number of tourists for instance, is mainly due to the fact that Moroccan residents abroad are included in the total number of tourists

arriving in Morocco by national authorities. Consequently, including it could have partially distorted our analysis, where we let us focus mainly on foreigners to express the tourist attractiveness of Morocco *vis-à-vis* the rest of the world. Similarly, Dupeyras and MacCallum (2013) considered the "overnights stays in all types of accommodation" as one of the leading indicators for measuring competitiveness in tourism.

On the one hand, correlation is a quantification of the linear relation between continuous variables. The calculation of the Pearson correlation coefficient is based on the calculation of the covariance between two continuous variables. The correlation coefficient is, in fact, the standardization of the covariance. This standardization makes it possible to obtain a value that will always vary between -1 and +1, regardless of the scale of measurement of the variables linked.

On the other hand, for the multiple regression we have followed the technique recommended by Santiesteban and Gamboa (2018). Therefore, this method intended to analyse a model that sought to explain the behaviour of a variable (endogenous, explanatory or dependent variable), designated Y, using information yielded by the values of a set of explanatory variables (exogenous or independent), designated X_1, X_2, …, X_n. Both the exogenous and the endogenous variables are quantitative. The linear model (econometric model) is thus given in the following form:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + … + b_n X_n + u$$

The coefficients (parameters) b_1, b_2,..., b_k denote the magnitude of the effect that the explanatory variables (exogenous or independent) X_1, X_2, …, X_n have on the explanatory variable (endogenous or dependent) Y. The coefficient b_0 is the constant (or independent) term of the model. The term u is the error term of the model. A set of T observations is available for each of the endogenous and exogenous variables. Thus, the model can be written in the following form:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + … + b_n X_n + u \qquad t: 1, 2, 3, …, T$$

The presence (not necessary) of an independent term in the model can be interpreted as the presence of a first variable X_0 whose value is always 1. The fundamental problem addressed is the following: assuming that the relation between the Y variable and the set of variables X, X_2,…,X_n is as described in the model and that a set of T observations exists for each of the endogenous and exogenous variables, then how can numerical values be assigned to parameters b_0, b_1, b_2,..., b_n based on the sample information? These values will be called parameter estimates. Once the model parameter estimates have been determined, it is possible to make predictions about the future behaviour of the Y variable. Therefore, the linear model was formulated based on the following hypotheses:

- Variables X_1, X_2, …, X_n are deterministic (they are not random variables), since their value is a constant derived from the sample taken.
- The u variable (error term) is a random variable with zero expectation and a constant diagonal covariance matrix (scalar matrix). That is, for all t, the variable u_t has a mean of zero and r_2 variance not dependent on t. In addition, Cov (u_i, u_j) = 0 for all i and for all j that are different from each other. The fact that the variance of u_t is constant for all t (not dependent on t) is called the hypothesis of homoscedasticity. The fact that Cov (u_i, u_j) = 0 for all i different than j is called the no auto-correlation hypothesis.
- The Y variable is random since it depends on the random u variable.
- The absence of specification errors is also assumed. That is, it is assumed that all the X variables that are relevant for explaining variable Y are included in the definition of the linear model.

- • The variables X1, X2, …, Xn are linearly independent. That is, there is no exact linear relation between them. This hypothesis is called the hypothesis of independence, and when it is not met, it is said that the model presents multicollinearity.
- • Sometimes, the hypothesis of normality of residuals is considered, as long as the ut variables are normal for all t.

Finally, this research does not purport to ascribe or align some economic, social, or political theory to the data; the intention is to provide a connection based on the evidence. Thus, an annual time series (2000-2018) is considered. The exercise was conducted using IBM's SPSS version 25 for statistical purposes. We sought to fit the connection with the R and R squared results.

The case study area

Tourism in Morocco has a long history and is an vital source of economic prosperity. Morocco has various significant advantages that allow it to compete strongly on the international tourism market (Porter et al., 2008). Moreover, the country's rich culture is a blend of Arab, Berber, indigenous African, and also other African and European influences (Stanić & Plenković, 2013). Morocco's fairly elevated amount of visitors compared to the rest of the continent, has also been helped by its specific attractions, geographical location, political stability, and relatively low prices (Map 1).

Map 1. Marrakesh city location
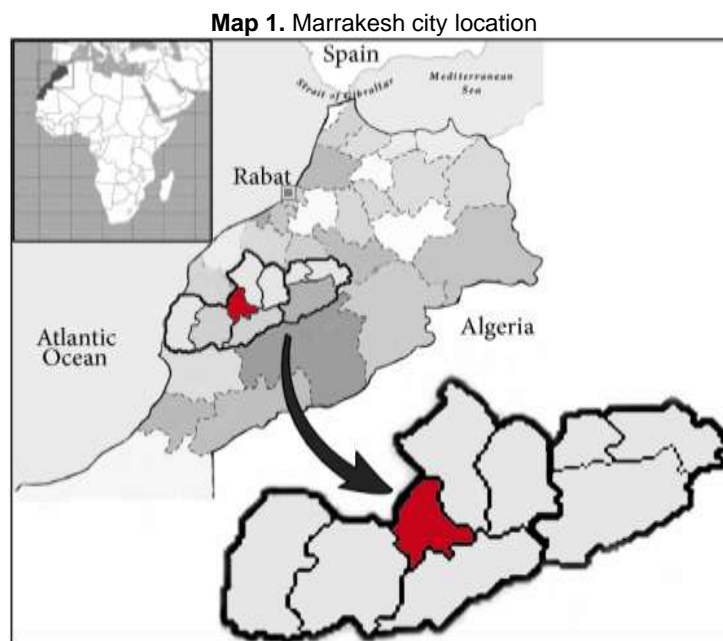
Source: Adapted from Boussaa et al., (2014).

The well-built tourist industry in Morocco is according to Steenbruggen (2014) a dominant driver of economic growth and is, after the phosphate industry, and the automotive industry accountable for the third-largest contribution to the country's GDP (approximate 9 percent of the GDP), and employs more than 500,000 people. Morocco is ranked 5th on the world list, in terms of government prioritization of the development of the Travel and Tourist industry (World Economic Forum, 2017). Morocco is a stable tourist destination and was only to some extent affected by the Arab Spring revolutions (Saeid et al., 2013) and not the late terrorist attacks facing the rest of the world. Tourism in Morocco is largely focused on two locations, Marrakesh and Agadir, which equals more than half of international overnight stays. Indeed, with more than 2,6 million tourist arrivals recorded between January and December 2018 (Moroccan National Tourist Office).

Marrakesh is undoubtedly Morocco's and North Africa tourism capital. Especially with the latest transport infrastructure development which the city has witnessed in the last 18 years.

In order to apprehend this phenomenon, we analysed the touristic attractiveness of Marrakesh city during the latest 18 years through the overnight stays in the accommodation establishments. Then, we compared it to the variation of passenger traffic after every single transport infrastructure development of the following: Casablanca-Marrakesh highway A7, Marrakesh City railway station, and Marrakesh Menara Airport (Table 1). The first column covers the years, the second covers the annual rail passenger traffic at national level, the third column the motorway traffic of cars registered at the toll station of Marrakesh, the 4th column the annual airport traffic in terms of passengers, the 5th column the annual number of nights spent in an officially registered accommodation establishments and finally the 6th and last column includes the main development occurrences of transport infrastructure in Marrakesh.

Table 1. Evolution of overnight stays and passenger traffic in Marrakesh City 2000-2018

| Year	Travelers/Year (Railway Traffic) in Morocco	Cars/Year (Highway Traffic) Arriving at Marrakesh	Passengers/Year (Airport Traffic) Arriving at Marrakesh	Overnight Stays/Year in Marrakesh	Transport Infrastructure Development
2000	10.988.000	-	1.411.700	3.150.000	
2001	12.686.000	-	1.393.015	3 576 638	
2002	14.679.000	-	1.349.363	3.161.000	
2003	16.426.000	-	1.368.281	3.845.014	
2004	18.431.000	-	1.667.267	4.185.014	
2005	21.005.000	-	2.195.899	5.333.831	**Readjustment of Terminal T1 & T2 (2005)**
2006	23.571.000	-	2.373.863	5.684.532	
2007	26.116.000	-	2.821.207	5.950.409	**Construction of Highway A7 Casablanca-Marrakesh (2007)**
2008	27.527.000	2.920.000	2.901.269	5.573.529	**Renovation of Railway Station in Marrakesh City (2008)** **Second Readjustment of Terminal T2 (2008)**
2009	29.600.000	3.285.000	2.799.840	5.533.834	
2010	30.910.000	3.832.500	3.259.203	6.357.891	
2011	33.931.000	3.914.625	3.278.201	5.754.482	
2012	36.021.000	4.015.000	3.218.742	5.917.921	
2013	38.101.000	4.358.465	3.654.532	5.918.055	
2014	39.500.000	4.527.095	3.848.212	6.000.000	
2015	40.479.000	4.764.710	3.978.725	6 260 132	
2016	39.487.000	5.081.530	3.894.227	6.640.000	**Construction of Terminal T3 (2016)**
2017	37.953.000	5.475.000	4.359.865	7.170.000	
2018	35.000.000	5.927.600	5.279.575	7.860.000	**Readjustment of railway line Casablanca-Marrakesh (Double track)**

Source: own elaboration.

Main Findings

During the last 18 years, the amount of overnight stays in Marrakesh has doubled, going from 3,150,000 to more than 8,000,000 as of August 2019. However, this evolution required the mobilization of a whole of development events at the level of infrastructure and mainly those of transport. Indeed, the analysis of the data in the table explicitly demonstrates the impact of the development of transport infrastructure on the evolution of tourist attractiveness in Marrakesh, where after each aerial or terrestrial infrastructure development, the number of passenger traffic

increases and the number of overnight stays follows the trend. For example, during 2004 and 2005, Marrakesh witnessed the readjustment of terminal T1 and T2 in Menara airport in term of floor space, check-in counters, baggage delivery mats, which impacted the air traffic positively with a growth of 42,38% in 2006 and therefore the overnight stays with an increase of 35,83% (Figure 4).

With that being said, it should be noted that the period chosen has experienced significant national and international events that have negatively influenced the evolution of the overnight stays curve (the terrorist attacks of September 11 in the US, the terrorist attacks of 2003 in Casablanca, the economic crisis of 2008, the terrorist attack of 2011 in Marrakesh). Thus, it is clear that there is an explicit linear regression between the development of transport infrastructure characterized by the positive fluctuations of the traffic and the number of overnight stays, especially between 2016 and 2017, where the overnight stays witnesses a positive increase of nearly 8% following the readjustment of terminal T3 in Marrakesh Menara Airport. In other words, the more the development and performance of these infrastructure increases, the more the destination of Marrakesh is attractive on the tourist side (Figure 4).

Figure 4. Evolution of the overnight stays in Marrakesh city's accommodation establishments compared to road and air traffic 2000-2018 (univariate linear regression)
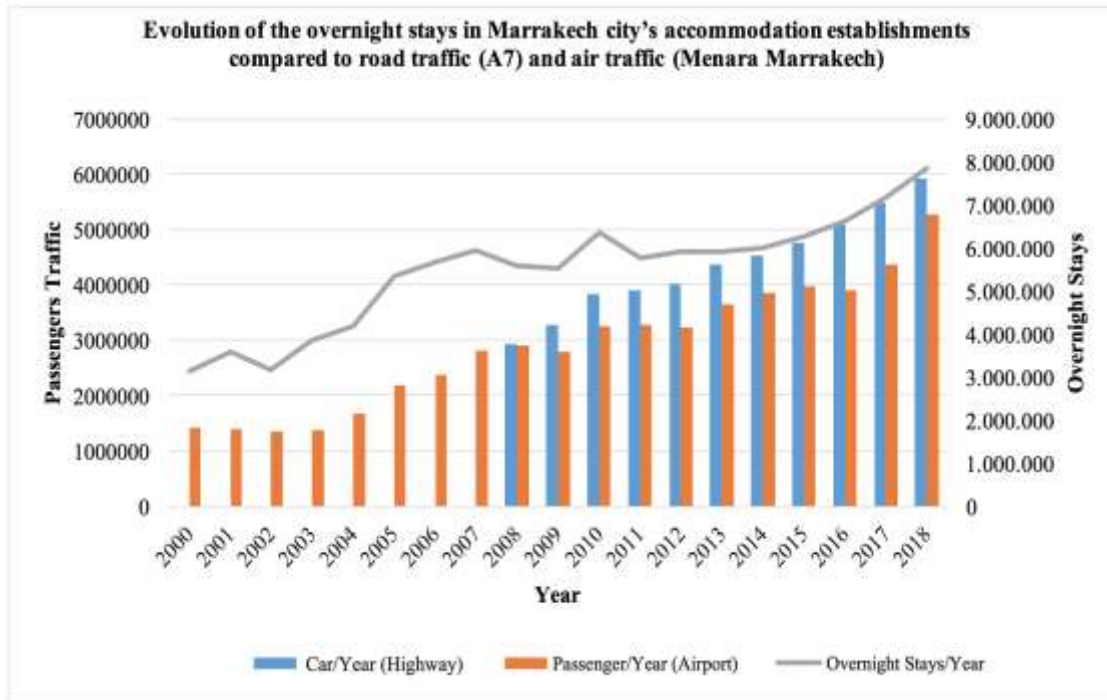
Source: own elaboration.

The correlation analysis helped us to tell how strongly the two variables 'Overnight Stays' and 'Passenger Traffic (highway and airport)' are related to each other. Undeniably, it showed a positive association since all of the results are powerfully close to 1 (Table 2). Thus, for a positive increase in one variable, there is also a definite increase in the second variable:

- Overnight stays and highway passenger traffic variables are positively correlated (0,811).
- Overnight stays and airport passenger traffic variables are positively correlated (0,947).

Table 2. Pearson correlation coefficient estimation

	Overnight Stays	Highway Passenger Traffic	Airport Passenger Traffic
Overnight Stays	1		
Highway Passenger Traffic	0,811902947	1	
Airport Passenger Traffic	0,947157306	0,921656	1

Source: Prepared by the authors.

This finding generally means, the more a transport infrastructure is developed, the more it handles traffic. Therefore a stronger passenger-traffic relatively positively impacts overnight stays. It should also be noted that we have noticed that there is a positive correlation between highway passenger traffic and airport passenger traffic (0,921) that can be raised in future research related to tourism.

In the same logic, the linear regression also assisted us to back up our previous analysis results. Indeed, the analysis presented above aims to demonstrate the relationship between air traffic and hotel occupancy through overnight stays, (Tables 4 and 5) summarize the crucial characteristics of the model and the ANOVA table, whose p-value for the F statistic indicates the joint significance of the model's estimated parameters because it is very small. The result obtained for the Durbin-Watson statistic is 0,832, which, since it is between 0 and 2, indicates a positive autocorrelation. Also, the R and R squared values are close to 1, which confirms a correlation between the variables used in the model.

Likewise, (Table 6) presents the estimations of the coefficients. The individual significance of the estimated parameters is excellent, as the p-values (Sig. column) equals 0 for air traffic and the overnight stays. Plus, chart 1 displays a histogram for the dependent variable and the normality of the residuals that corroborate this normality. Hence, the normality hypothesis does not present a problem.

Table 3. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	,943[a]	,888	,881	460537,169	,888	127,253	1	16	,000	,832

a. Predictors: (Constant), AIRTRAFIC
b. Dependent Variable: OVERNIGHT
Source: Prepared by the authors.

Table 4. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.989.740.099.263	1	26.989.740.099.263	127,253	,000[b]
	Residual	3.393.511.751.768	16	212.094.484.486		
	Total	30.383.251.851.031	17			

a. Dependent Variable: OVERNIGHT
b. Predictors: (Constant), AIRTRAFIC
Source: Prepared by the authors.

Table 5. Coefficients^a

| Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t		Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1973391,893	324484,310		6,082	,000					
AIRTRAFIC	1,247	,111	,943	11,281	,000	,943	,943	,943	1,000	1,000

a. Dependent Variable: OVERNIGHT
Source: Prepared by the authors.

Figures 5-6. Histogram for the dependent variable and normality of the residuals
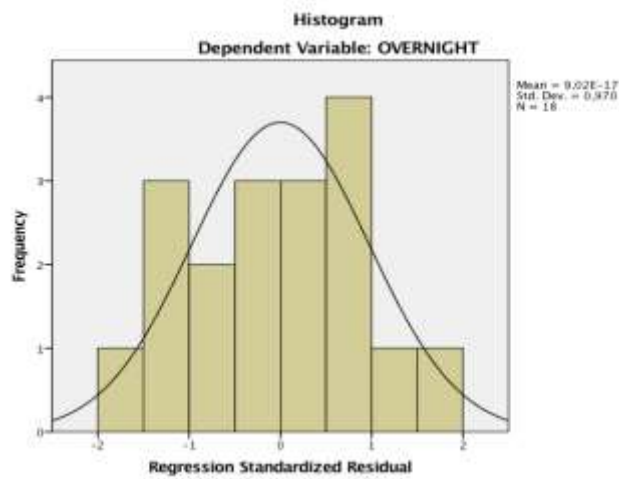
Source: Prepared by the authors.
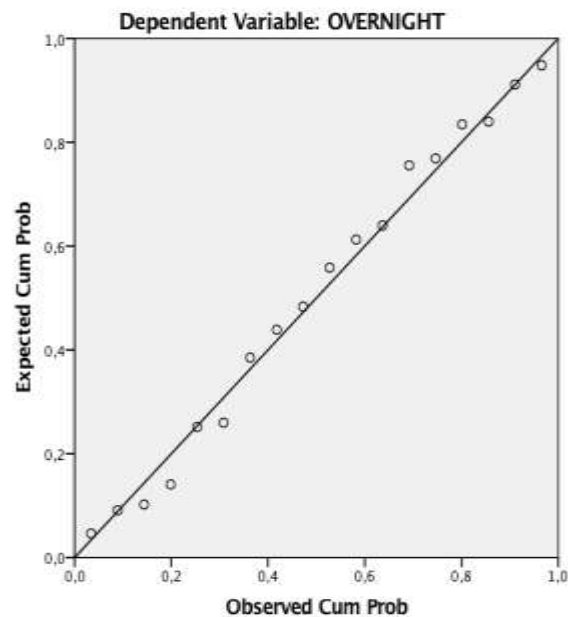
Source: Prepared by the authors.

Conclusion

Even though numerous analysts have recognized the requirement for efficient transport in a successful program of territorial development, very constrained observational research exists to reveal insight at its effect on the impact on tourism attractiveness and competitiveness. A destination visit is an amalgam of experiences, and some components may have more impacts on tourist assessments than others. Thus, the findings of this research attempted to distinguish the existence of a possible relation between transport and tourism empirically, mainly via developing transport infrastructure and destination attractiveness. Thus, when it came to analysing transport infrastructure and tourism, the territory logistics concept became the key concept in order to better understand the complexity of the tourism system. Indeed, territorial logistics, which is a new concept in the literature, should be taken into consideration since it allows a better understanding of the long term impact of transport and logistics infrastructure on the structure and the competitiveness of territory, including its touristic attractiveness side.

Accordingly, this paper conducted through a case study first, identified and shaped the research questions using literature that narrowed our interest in transport infrastructure and destination attractiveness, through the literature review presented in the first section of this article. Moreover, it identified the relationship between the concepts that shaped our study. Furthermore, it used linear regression and Pearson correlation techniques. Consequently, we found that transport infrastructure development has not only been contributing positively to tourist attractiveness in Marrakesh during the last 18 years, but it is also close to have a perfect positive connection between the two variables.

Hence, as far as policy implications are concerned, the Moroccan government should integrate transport policies even more into tourism planning, especially for a country with non-competitive infrastructure compared to neighbouring competitors. Investing in tourism infrastructure, marketing efforts, and liberalizing air access might not be enough without an necessary efficient transportation support infrastructure. Hence ad-hoc government spending cuts and neglected infrastructure needs in limited public finance should be considered all over again. Local policymakers should have an explicit focus on strategic long-term planning and requirements. They should furthermore, develop and integrated an efficient and affordable transport system that is sustainable from social, economic, and environmental points of view. Nevertheless, the actual projects and work in progress seem optimistic and are likely to develop the tourist attractiveness capacity of the country.

At last, a thorough analysis should be undertaken regarding this phenomenon to further investigate the connection between transport development and tourism attractiveness more deeply, as this may allow the prescription of more African territory-specific implications and suggestions within future research.

References

Abeyratne, R. I. (1993). Air transport tax and its consequences on tourisms. *Annals of Tourism Research*, 20(3), 450-460.

Adebayo, A. K. & Iweka, A. C. O. (2014). Sustainable infrastructure upgrade in slum settlements of Lagos, Nigeria: The role of the architect. *Environmental Research, Engineering and Management*, 68(2), 53-60.

Adeola, O., Boso, N. & Evans, O. (2018). Drivers of international tourism demand in Africa. *Business Economics*, 53(1), 25-36.

Boussaa, S., Kasbari, M., El Mzabi, A. & Boumezzough, A. (2014). Epidemiological Investigation of Canine Leishmaniasis in Southern Morocco. *Advances in Epidemiology*, *2014*, 104697.

Brown, T. L. & Connelly, N. A. (1985). Using Origin-Destination Analysis in Marketing Tourism for Large Natural Regions. *Tourism Recreation Research*, 10(2), 41-44.

Chew, J. (1987). Transport and tourism in the year 2000. *Tourism Management*, 8(2), 83-85.

Cholik, M. A. & SE, M. (2017). The development of tourism industry in Indonesia: Current problems and challenges. *European Journal of Research and Reflection in Management Sciences*, 5(1).

Christie Mill, R. & Morrison, A. M. (1985). The tourism system-An introductory text, Englewood Cliffs, N.J. : Prentice-Hall International.

Cohen, E. (1979). A phenomenology of tourist experiences. *Sociology*, 13(2), 179-201.

Dann, G. M. (1997). Paradigms in tourism research. *Annals of Tourism Research*, 24(2), 472-474.

Dickman, S. (1997). Tourism: An introductory text. Hodder Headline.

Dupeyras, A. & MacCallum, N. (2013). Indicators for Measuring Competitiveness in Tourism: A Guidance Document, OECD Tourism Papers, 2013/02, OECD Publishing.

El Hafid, M., El Assri, H. & Sair, A. (2018). Moroccan Gastronomy as a Key Factor of Tourism Attractiveness in Morocco. In Innovative Approaches to Tourism and Leisure (pp. 323-338). Springer, Cham.

Formica, S. & Uysal, M. (2006). Destination attractiveness based on supply and demand evaluations: An analytical framework. *Journal of Travel Research*, 44(4), 418-430.

Gearing, C. E., Swart, W. W. & Var, T. (1974). Establishing a measure of touristic attractiveness. *Journal of travel Research*, 12(4), 1-8.

Genest, J. & Legg, D. (2003). Premier-ranked tourist destinations: development of a framework for analysis and its self-guided workbook. Ontario: Turismo del Gobierno de Canadá.

Gunn, C., ed. (1988). Tourism Planning (2nd ed.). New York: Taylor & Francis.

Gunn, C.A. (1994). Tourism Planning: Basics, Concepts and Cases, 3rd edn., Washington, DC: Taylor & Francis.

Heung, V. C., Qu, H. & Chu, R. (2001). The relationship between vacation factors and socio-demographic and travelling characteristics: the case of Japanese leisure travellers. *Tourism Management*, 22(3), 259–269.

Hu, Y. & Ritchie, J. B. (1993). Measuring destination attractiveness: A contextual approach. *Journal of Travel Research*, 32(2), 25-34.

Inskeep, E., ed. (1991). Tourism Planning: An Integrated and Sustainable Development Approach. New York: Van Nostrand Reinhold.

Ivanov, S. H. & Webster, C. (2013). Globalisation as a driver of destination competitiveness. *Annals of Tourism Research*, 43, 628-633.

Jiang, Y., Ramkissoon, H. & Mavondo, F. (2016). Destination marketing and visitor experiences: The development of a conceptual framework. *Journal of Hospitality Marketing & Management*, 25(6), 653-675.

Jovanović, S. & Ivana, Ilić. (2016). Infrastructure as important determinant of tourism development in the countries of Southeast Europe. *Ecoforum Journal*, 5(1).

Kaul, R. N. (1985). Dynamics of Tourism: A Trilogy. Transportation and Marketing. Sterling Publishers.

Kim, S. H. (1998). Content Analysis: Annals of Tourism Research & Journal of Travel Research (Doctoral dissertation, University of Wisconsin--Stout).

Kim, S. S. & Lee, C. K. (2002). Push and pull relationships. *Annals of Tourism Research*, 29(1), 257-260.

Kim, S. S., Crompton, J. L. & Botha, C. (2000). Responding to competition: A strategy for sun/lost city, South Africa. *Tourism Management*, 21(1), 33-41.

Kozak, M. & Baloglu, S. (2010). Managing and marketing tourist destinations: Strategies to gain a competitive edge. Routledge.

Kozak, M. & Rimmington, M. (1998). Benchmarking: destination attractiveness and small hospitality business performance. *International Journal of Contemporary Hospitality Management*. 10(5), 184-188.

Laws, E. (1995). Tourist destination management: issues, analysis and policies. Routledge.

Leon Santiesteban, M. & Flores Gamboa, S. (2018). The effects of crime on tourism : A multiple regression analysis. *AMSE - IIETA,* 1, 26-30.

Lew, A. A. (1987). A framework of tourist attraction research. *Annals of Tourism Research*, 14(4), 553-575.

Lim, C. (1997). Review of international tourism demand models. *Annals of Tourism Research*, 24(4), 835-849.

Lovelock, B. & Lovelock, K. (2013). The ethics of tourism: Critical and applied perspectives. Routledge.

Lundgren, J. O. (1982). The tourist frontier of Nouveau Quebec: functions and regional linkages. *The Tourist Review*, 21(1), 46–64.

Markowski, J., Bartos, M., Rzenca, A. & Namiecinski, P. (2019). An evaluation of destination attractiveness for nature-based tourism: Recommendations for the management of national parks in Vietnam. *Nature Conservation*, 32, 51.

Martin, C. A. & Witt, S. F. (1988). Substitute prices in models of tourism demand. *Annals of Tourism Research*, 15(2), 255-268.

Martin, C. A. & Witt, S. F. (1988). Substitute prices in models of tourism demand. *Annals of Tourism Research*, 15(2), 255-268.

McElroy, J. L. (2003). Tourism development in small islands across the world. Geografiska Annaler: Series B, *Human Geography*, 85(4), 231-242.

Mo, C. M., Howard, D. R. & Havitz, M. E. (1993). Testing an international tourist role typology. *Annals of tourism research*, 20(2), 319-335.

Murphy, P., Pritchard, M. P. & Smith, B. (2000). The destination product and its impact on traveller perceptions. *Tourism management*, 21(1), 43-52.

Naudé, W. A. & Saayman, A. (2005). Determinants of tourist arrivals in Africa: a panel data regression analysis. *Tourism Economics*, 11(3), 365-391.

Notteboom, T. & Rodrigue, J. P. (2017). Re-assessing port-hinterland relationships in the context of global commodity chains. In Ports, cities, and global supply chains (pp. 67-82). Routledge.

Ouariti, O. Z. & Hamri, H. M. (2014). Business Tourism Towards Improving the Tourism Offer in Morocco: Case of Seaside Town of Agadir. *International Journal of Business Tourism and Applied Sciences*, 2(2), July-December 2014.

Pearce, D. G. (1981). Tourist development. Longman Group Limited.

Popesku, J. & Pavlović, D. (2013). Competitiveness of Serbia as a tourist destination: Analysis of selected key indicators. *Marketing*, 44(3), 199-210.

Porter, M. E., Delgado, M., Ketels, C. & Stern, S. (2008). Moving to a new global competitiveness index. *The global competitiveness report*, *2009,* 43-63.

Prideaux, B. (2000). The role of the transport system in destination development. *Tourism management*, 21(1), 53-63.

Raina, A. K. (2005). Ecology, wildlife and tourism development: principles, practices and strategies. Sarup & Sons.

Ritchie, J.R.B. & G.I. Crouch (2003). The Competitive Destination: A Sustainable Tourism Perspective, CABI Publishing, Wallingford, UK.

Rodrigue, J. P., Comtois, C. & Slack, B. (2016). The geography of transport systems. Routledge.

Saeid, A., Arifin, Z. & Hasim, MS. (2013). The Role of the Government of Abu Dhabi for Promoting Eco-tourism. *Journal of Applied Sciences Research*, 8(6), 2897-902.

Seetanah, B., Juwaheer, T., Lamport, M., Rojid, S., Sannassee, R. & Subadar, A. (2011). Does Infrastructure Matter In Tourism Development? *University of Mauritius Research Journal*, 17(1), 89-108.

Smith, S. L. (1994). The tourism product. *Annals of tourism research*, 21(3), 582-595.

Sparks, C. (2007). Globalization, development and the mass media. Sage.

Stake, R. E. (2005). Qualitative Case Studies. In N. K. Denzin & Y. S. Lincoln (Eds.), The Sage handbook of qualitative research (p. 443–466). Sage Publications.

Stanić, M. & Plenković, M. (2013). Morocco–Still Under French Influence. *Media, culture and public relations*, 4(2), 212-218.

Steenbruggen, J. (2014). Tourism geography: Emerging trends and initiatives to support tourism in Morocco support tourism in Morocco. VUA - Research Memorandum 2014-2. 2014. 1-29.

Tang, J. C. & Rochananond, N. (1990). Attractiveness as a tourist destination: a comparative study of Thailand and selected countries. *Socio-Economic Planning Sciences*, 24(3), 229-236.

Tourism & Transport Forum (TTF) (2012) Tourism Infrastructure Policy and Priorities, http://www.ttf.org.au/Content/infprio201112.aspx, accessed March 20, 2015.

Um, S., Chon, K. & Ro, Y. (2006). Antecedents of revisit intention. *Annals of tourism research*, 33(4), 1141-1158.

Van Raaij, W. F. (1986). Consumer research on tourism mental and behavioral constructs. *Annals of Tourism Research*, 13(1), 1-9.

Vengesayi, S., Mavondo, F. T. & Reisinger, Y. (2009). Tourism destination attractiveness: Attractions, facilities, and people as predictors. *Tourism Analysis,* 14(5), 621-636.

Witt, S. F., & Witt, C. A. (1995). Forecasting tourism demand: A review of empirical research. *International Journal of forecasting*, 11(3), 447-475.

Yin, R. K. (2009). Case study research: Design and methods (4th Ed.). Thousand Oaks, CA: Sage.

Yin, R. K. (2014). Case study research: Design and methods (applied social research methods). Thousand Oaks, CA: Sage publications.