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Does High Speed Rail services influence tourists' choice? Some concerns from Paris and Roma and other linked cities

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Does High Speed Rail services influence tourists' choice? Some concerns from Paris and Roma and other linked cities

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Abstract

Improvement of transportation has contributed to tourism expansion. Indeed tourism implies mobility and mobility needs transportation. Furthermore, transportation links the various destinations and people, goods, and services. The link between HSR services and tourism has been investigated only recently in the literature, analysing potential effects of HSR on tourism (depending on the type of tourism), and local expectation of stakeholders. This paper analyses HSR services as a potential factor for the choice of a tourist destination from a quantitative point of view. Two case studies will be analysed and compared, i.e Roma and Paris. The results of two Revealed Preference surveys show that if HSR services are not a main factor in the destination choice, they have anyway affected the choice of Paris and Rome and differently. This analysis contributes to an evaluation of the High Speed Rail wider impacts on local economic dynamics.

Introduction

Major investments on High Speed Rail (HSR) systems have been recently carried out all around the world. Asia is currently the leader in HSR systems in terms of km of lines with 13 221 km (7 139 km in Europe)¹. In USA, except the north-east corridor, HSR is a nascent project. In 2013, 1 139 km are planned especially in California. At the same time, all over the world, 14 610 km are under construction and 16 348 are planned by 2025.

These lines and these projects generate many expectations in served cities in terms of economic dynamism. But a recent review of the literature shows that it is not always the case². No significant effects result from a HSR infrastructure alone³. In this paper we focus on tourism. Indeed, due to the economic crisis and the difficulties that industry encounters, some cities wish to develop tourism and specially urban and business tourism⁴. Our aim is to analyse how affected urban tourism may be by HSR Services (HSRS) and more specifically, how destination choice can be affected by this services. Although there is some literature on HSRS and tourism⁵, the analysis on the link between HSRS and destination choice seems to have been less investigated. How do holidaymakers select and revisit their holiday destinations? Which are the factors determining their choices? This paper is organized as follows. Section 1 provides an overview of the literature about the link between HSR systems and tourism. Section 2 reports the two case studies of Rome and Paris, specifically the results of two surveys will be analyzed in details, while in section 3 the willingness to revisit Rome and Paris is described from the modelling point of view.

1. HSRS and Tourism, a review

In the literature, transport is recognized as very important for tourism development. However, in general, the analysis of this role has often been overlooked: “*little serious research has been undertaken into the significance of transport as a factor in destination development*”⁶. But “*the health of the nation’s tourism industry is inextricably tied to the efficiency of its transport system*”⁷. Indeed, transport is intrinsically linked to tourist’ behaviour; transport is an integral part of tourism. Moreover, “*the ability of the transport industry to service the needs of the tourist industry is largely driven by the key consumer demands for speed, convenience, safety, comfort and affordability*”⁸. In the case of HSRS, there are a lot of expectations concerning the tourism development in cities

¹ UIC, 2013.

² Bazin, Beckerich, Blanquart, Delaplace & Vandenbossche, 2011.

³ Offner & Crews, 1991, Offner, 1993 ; Vickerman, 1997 ; Bazin, Beckerich, Delaplace et Masson, 2006 ; Blanquart & Delaplace, 2009.

⁴ Delaplace & Perrin, 2012.

⁵ Bazin, Beckerich, Blanquart, Delaplace & Vandenbossche, *op. cit.*, Bazin, Beckerich & Delaplace, 2013a.

⁶ Prideaux, 2000, p. 54.

⁷ Prideaux, 1993, p. 246.

⁸ *ibid.*, p. 248.

served by HSRS (1.1), but *ex post* the evidence is less clear (1.2). Concerning destination choice, HSRS has not yet been sufficiently investigated (1.3).

1.1 HSRS and urban and business tourism, many expectations *ex ante*...

Many expectations are linked to a new HSR stop. HSRS is assumed to have direct impacts on tourism development (Figure 1), in particular on urban and business tourism. Indeed these tourism seems to be the forms of tourism that are likely to benefit from a HSRS⁹.

Figure 1 : The literature concerning High speed rail service and tourism

Types of effects	Authors
Widening of tourist markets	Sands, 1993 ; Masson & Petiot, 2009 ; Urena, Menerault & Garmienda, 2009 Chen & Haynes, 2012 ; Wang, Huang, Zou & Yan, 2012 ;
Increase in the number of tourists	Mannone, 1995 ; Sands, 1993 ; Buttet, 2001 ; CRCT PACA, 2003 ;
Increase in occupancy rates	Sands, 1993 ; Mannone, 1995 ;
Fall in the number of nights and in the length of stays in the long run	Bonnafous, 1987 ; Mannone, 1995 ; Haynes, 1997 ; Sands, 1993 ; INSEE Lorraine 2009 ; Bazin, Beckerich & Delaplace, 2011 ; AUDRR, 2012 ;
Increase in the number of nights in the short run	INSEE Lorraine 2009 ;
Improvement of the accessibility and reinforcement in the competition between tourist destinations	Masson & Petiot, 2009 ; Chen & Haynes, 2012 ; Coronado, Garmendia, Moyano & Ureña, 2012 ; Wang, Huang, Zou & Yan, 2012 ;
Urban tourism development	CRCT PACA, 2003 ; Bazin, Beckerich & Delaplace, 2010, 2011, 2013a ; Delaplace & Perrin, 2012 ;
Business tourism development	Amiard, 1997 ; Faye, 1998 ; Tourisme-Alsace, 2008 ; Bazin, Beckerich & Delaplace, 2010, 2011, 2013a ; Ville de Marseille, 2011 ; Delaplace & Perrin, 2012 ; AUDRR, 2012 ;
Impacts on tourist destination choice	Valeri, Pagliara & Marcucci, 2012 ;

Source: based on Bazin, Beckerich, Blanquart, Delaplace & Vandenbossche (2011) and supplemented by the authors

According to gravitation models¹⁰ the number of visitors that can be attracted to a destination depends on the magnitude of the population in the area market and on the distance between this destination and this market area. The number of tourists decreases with growing distance. However a transport innovation as a HSRS¹¹ modifies the link between tourists and distance because a decrease of the travelling time can be analyzed as a decrease of distance. If we consider the value of the time, HSRS can decrease generalized transport costs. Consequently HSRS can affect the utility of tourists and the competition between destinations¹²: the market area and the market competition can be enlarged. Some cities can be reinforced while others could be disadvantaged¹³. Chen and

⁹ Manonne, 1995 ; Amiard 1997 ; Masson & Petiot, 2009; Urena, Menerault & Garmienda., 2009 ; Bazin, Beckerich & Delaplace, 2010, 2011 ; Bazin, Beckerich, Blanquart, Delaplace & Vandenbossche., *op. cit.* ; Delaplace & Perrin, *op. cit.*

¹⁰ See Crampon L.J. (1966) for the first study of that type.

¹¹ Delaplace, 2012.

¹² Masson & Petiot, 2009.

¹³ For the Chinese' case study, see Wang, Huang, Zou & Yan, 2012.

Haynes showed that Chinese's provinces that are served by HSRS “*are likely to have approximate 20 percent additional numbers of foreign arrivals and 25 percent greater tourism revenues than provinces without such systems*”¹⁴. For these authors, HSR will have an effect on strengthening the competitiveness in tourism.

Urban tourism concerns numerous activities (visits to museums, cultural heritage, food tasting, shopping, events, etc.) which may have little relation. It concerns mainly individuals or couples from diversified socio-economic groups with, sometimes a high sensitivity to price. It is usually short stay tourism (two or three days) for example during weekends. This kind of tourism is growing significantly with the growth of the short-break holidays and, in France, the reduction of working time (35h).

Business Tourism which is a tourism with business purposes includes congress, conferences, symposia, seminars, incentives or workshops, etc. It is also short stay tourism (two or three days) but during the week and it is characterized by individual or collective travels. They don't pay directly the journey, because it is supported by their organization. Indeed, the decision to attend a conference is not an individual one but is made primarily by companies or governments. Like other forms of tourism, this tourism is characterized by a shortening of stay. The sites are generally located in the downtown area. With accessibility and accommodation capacities these are the first three criteria for selecting a site. Consequently, the presence of a HSRS can be important for business tourism stakeholders since it allows fast access.

In their analysis of the impact of HSR on urban and business tourism on French cities close to Paris in France, Bazin *et al.*¹⁵ showed that this kind of tourism may be fostered by HSR for at least four reasons: first, urban tourism is short stay tourism (two or three days) especially during weekends. Consequently, using HSRS avoids the fatigue of driving, congestion and parking difficulties in city centers. Second, in some countries and during certain times of the year, especially with some promotional offers, it can be cheaper for people travelling alone or in couples than using a car. Third, comparing to airplane, it can allow saving time especially when the station is located in the center of the city. Finally, it offers advantages due to the growing concern for sustainable development. HSRS can present better ecological assessment than other means of transportation. For example in France, according to ADEME, for a journey from Paris to Marseille, CO2 emissions

¹⁴ Chen & Haynes, 2012, p.1.

¹⁵ Bazin, Beckerich & Delaplace, 2010, 2011, *op. cit.*

in grams per passenger-kilometre (g/pkm) are around 2.7 g/pkm by High-speed Train, 153 g/pkm by airplane and 115.7 g/pkm by car¹⁶.

And when a new HSR services is inaugurated in a city, stakeholders in new served cities have many expectations in terms of tourism development. Several French cases illustrated that. They estimate that they can attract clients especially from the Parisian metropolis.

For example the opening of the East European High-Speed Line in 2007 (French section), and the improvement of the accessibility ought to make the Lorraine corridor more attractive¹⁷. Specifically, Metz, Nancy and Epinal served cities (see Figure 4 below) plan to benefit from tourism development: cultural tourism in general and also business tourism in Metz and Nancy¹⁸.

In the same manner, in 2005, the Alsace region considered that HSRST was an opportunity to renew the tourism offer by attracting clients from Paris region¹⁹. A tourism development is also expected in the cities that should be served by Southwest Line (Bordeaux, Narbonne Toulouse (Figure 4) etc.²⁰. It is the same in the France-Comté region and particularly in Besançon (Figure 4) which is characterized by an important architectural heritage²¹.

More recently, within the public debate about the New Line Paris-Normandie, all the stakeholders of the Basse-Normandie region who participate to the debate expected a tourism development²². The Basse-Normandie region being a short-stay holiday destination for Parisian clients, the growing accessibility is expected to reinforce its touristic situation. It is the case in Caen (Figure 4) particularly concerning the cultural, memory-based heritage and the business tourism²³.

In the same manner, within the public debate about the High-Speed Line LGV Paris Orléans Clermont-Ferrand Lyon (POCL), Roanne (Figure 4) expected to develop events, gastronomy and business tourisms²⁴. The business tourism is the more concerned tourism²⁵.

But *ex post*, the evidence is not that clear: the different impacts of HSRS on tourism development are difficult to light, because this development is linked to many conditions²⁶.

1.2 Impacts of the HSR on tourism development: Mixed results *ex post*...

Ex post, sometimes a touristic dynamism is noted, but sometimes for a short period. Sometimes, projects are undergone²⁷.

¹⁶ European Commission, 2009, p.46.

¹⁷ ISIS, 2004a, p. 49.

¹⁸ ISIS, 2004b.

¹⁹ CES Alsace, 2005, p.8.

²⁰ SETEC, 2005.

²¹ Villes Et Régions Européennes De La Grande Vitesse, 2009.

²² Guinguand, 2012.

²³ Communauté d'agglomération de Caen la Mer, 2011.

²⁴ Ville de Roanne, 2011.

²⁵ SETEC, 2005.

²⁶ Delaplace, 2012.

²⁷ For an analysis of Rhin-Rhône High-speed Line, see Carrouet, 2013.

This is the case for several French destinations. In Tours, where the HSRS was opening in 1990, the touristic activity was growing (+ 8% from 1994 to 1999)²⁸, but it is very difficult to estimate the role of HSRS in this growth. In the Provence-Alpes Côte d'Azur region, 2 million additional tourists would have come between 1997 and 2003. In the same manner, urban tourism would have been boosted by the Mundial in 1998 and HSRS in 2001²⁹. A year after the East European High Speed Line opened, in Strasbourg, the number of French nights was growing around 7%³⁰. In Nancy as in Metz, the nights grew.

This increase is also quoted in Taiwan³¹ and China where some cities benefit from a HSRS³². Zhenhua Chen and Kingsley E. Haynes noted that in China the served provinces “are likely to have approximate 20 percent additional numbers of foreign arrivals and 25 percent greater tourism revenues than provinces without such systems”³³. HSR has a reinforcement effect on touristic competitiveness of served cities.

Nevertheless, in France, two years after the East European HSRS opening and for all the served cities, Strasbourg seems to be alone to take advantage³⁴. In 2009, the occupancy rate had returned to the level before the HSRS but with a growth of +6% of the offer of rooms. But in Metz as in Nancy, the hotel occupancy rates are lower than they were before the HSRS (-4.7 points for Metz, -3 points for Nancy). According to INSEE, between 2007 and 2008, the length of touristic stays is being reduced in nearly all areas concerned by East-European HSL³⁵. In the same manner, a study concerning the Paris-Lyon line from 1980 to 1985 shows a decrease of the stay length in Dijon, Valence and Lyon Perrache, but not in Beaune³⁶. The increase of tourist in the short run can be accompanied by a decrease of the stay length which is sustainable on the long run³⁷.

The served cities are also very interesting for business tourism stakeholders. In the case of Le Mans (France), a city close to Paris (55 minutes by HSRS), business tourism was growing: the number of congress grew from 15 in 1987 to 30 in 1993. At that date, in 1993, 70% of the clients were coming from Paris region and 70 % of the congressmen, were coming to Le Mans by HST³⁸. In the same manner, in Tours, business tourism was limited during the 1980's (10 congress in 1984, 22 in 1985). In 1993, *i.e.* after the HSRS opening, it grew to 120 and 134 in 1996³⁹. But as in other cities, the

²⁸ Buttet, 2001.

²⁹ CRCT PACA, 2003.

³⁰ Tourisme-Alsace, 2008.

³¹ Cheng, 2009.

³² Wang, Huang, Zou & Yan, *op. cit.*; Chen & Haynes, *op. cit.*

³³ Chen & Haynes, *op. cit.*, p. 1.

³⁴ INSEE Lorraine, *op. cit.*

³⁵ *Ibid.*

³⁶ Bonnafous, 1987, *op. cit.*

³⁷ Bazin, Beckerich & Delaplace, 2013b.

³⁸ Amiard, 1995, p.56.

³⁹ Faye, 1998.

growing accessibility induced a decrease of the length stay. In Lyon, HSRS contributed to the business national congress growth, the length of stay decreased from 2,3 days to 1,7 in 1993⁴⁰.

In Dijon by contrast, business tourism did not grow and HST seemed to gain more profit to Paris⁴¹. The location of the congress centre, not close from the train station could be a reason. In Beaune, it is after the HST arrival than the Congress centre was created. But HSRS seemed to play an important role in its activity development. Indeed, without it, some events would not take place there⁴². In Chambéry as in à Grenoble, if HSRS has improved the accessibility, the congress development is more linked to world-famous research centres which are located in these two cities and able to generate such boast⁴³.

In numerous cities, amenities and global accessibility seem to be more important in the business tourism development. In the same manner, from 1996 to 2009, the number of congress days held in Marseille was growing from 109 021 to 294 124⁴⁴. More recently in Strasbourg between June of 2005-2006 and June-December 2007, the activity of Strasbourg Events grew significantly: +12% for the number of business events; +11% for national and international events, +23% for the seminar days and +40% for the sales of meetings realized by business Hotel⁴⁵.

In Reims, HSRS promoted business tourism within the context of the current economic crisis. The reservation planning of the congress centre was fulfilled two years before the HSRS arrival (in 2007) whereas previously it would not. The congress number grew from 16 in 2005 (including 4 international) to 19 in 2007 (including 2 international) and to 27 in 2010 (including 9 international)⁴⁶. But the occupancy average length decreased from 3,81 days in 2005 to 2,68 in 2010⁴⁷.

We must now recognize, however, the heterogeneity of the link between HSRS and tourism. This evidence highlights the need of a contextual analysis of HSRS effects: it is necessary to take into account the diversity of the socio-economic conditions in cities in terms of tourism as in other areas⁴⁸. More recently researches focus on the impact of HSRS on the destination choice of tourists.

1.3 High speed rail service and destination choice

The analysis on how urban tourism destination choice may be affected by HSRS needs to identify the elements affecting the choice of destination.

⁴⁰ Mannone, *op. cit.*, p.280.

⁴¹ Mannone, *op. cit.*, p.174.

⁴² Mannone, *op. cit.*, p.212.

⁴³ Mannone, *op. cit.*, p.356.

⁴⁴ Ville de Marseille, 2011, p.8.

⁴⁵ Tourisme-Alsace, *op. cit.*

⁴⁶ AUDRR, 2012.

⁴⁷ *Ibid.*

⁴⁸ Bazin, Beckerich, Blanquart & Delaplace, 2013.

In 1973, Donald Rugg wrote “*little theoretical or empirical research has been generated on the determinants of the demand for foreign travel*”⁴⁹. He was the first to introduce a time constraint, the modification of the budget due to transportation cost between alternate destinations and the modifications of the time constraint resulting from including the time cost between alternative destinations.

Since then, there have been a lot of studies concerning destination choice. From a microeconomic point of view, a review of the existing tourism demand literature is dominated by econometric models which follow a single-equation time-series approach⁵⁰, and from few advanced studies of demand systems⁵¹. Because the existing demand models do not consider measures of traveller’s attitudes including perceptions of service attributes and personal feelings toward different destinations and/or services, they are not sensitive to the wide range of strategies that can be designed to motivate/influence or change consumer travel behaviour⁵². In addition to the most popular time series models, Song and Li⁵³ reported an overview of the modelling and forecasting methods that can be applied to tourism. Specifically, logistic regression models have been extensively used also at the touristic demand analysis⁵⁴ especially to explain the decision to do/not to do a holiday. Those analysis have been extended by some contributions which analyze the relationship between past experience and the perceived image of a tourist destination⁵⁵; individual characteristics and the type of accommodation used⁵⁶; duration of the holiday and socio-demographic, motivations and destination characteristics⁵⁷. More generally, in their seminal general model of traveler destination choice, in 1989, Woodside and Lysonski take into account a lot of elements about the traveller destination choice⁵⁸ (Figure 2). But transport is not a key element of destination choice.

Another interesting aspect for tourism is to study tourist’s intention to revisit a specific destination and particularly for cities. In this respect, we can hypothesis that HSRS can foster the tourism intention to revisit a city. Very limited contributions are present in the literature. One of the most important paper analyses the probability of revisiting Cyprus with respect to socio-demographic and destination characteristics⁵⁹. In this paper a micro-econometric approach, based on observations of holidaymakers, is proposed. This approach allows the examination of the characteristics which influence individual travel behaviour and it provides a conceptual/methodological framework for

⁴⁹ Rugg, 1973, p.65.

⁵⁰ Lim, 1997.

⁵¹ O’Hagan & Harrison, 1984.

⁵² Koppelman, 1980.

⁵³ Song & Li, 2008.

⁵⁴ Witt & Witt, 1995; Song & Wong, 2003.

⁵⁵ Beerli & Martin, 2004; Decrop & Snelders, 2004.

⁵⁶ Pina & Delfa, 2005.

⁵⁷ Filippini, 2005.

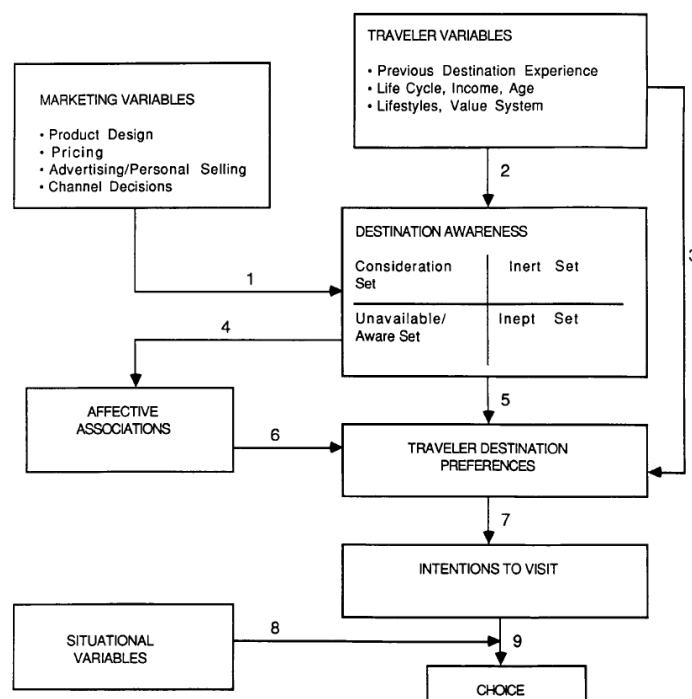
⁵⁸ Woodside & Lysonski, 1989.

⁵⁹ Seddighi & Theocharous, 2002.

the understanding of the nature, form and character of the holiday-decision-making processes of individuals.

The first study which analyses the different covariates of revisiting Lisbon uses a mixed logit model and a mixed logit with bounded parameters model. The probability of revisiting Lisbon “*increases significantly with accommodation range, events, food quality, expected weather, beach, overall quality, nightlife, reputation, and safety*”⁶⁰. They also showed that the overall quality and reputation variables, which are not statistically significant in the logit model, become statistically significant in the mixed logit model.

Figure 2 : A general model of traveler destination choice for leisure purpose



Source: Woodward & Lysonski (1989, p.9)

However, currently and to our knowledge, there is no previous survey that tries to evaluate the link between HSRS and 1) tourism destination choice and 2) tourism return intention to an urban destination, apart from the case study of Roma which will be described later in the paper⁶¹. As mentioned above, from the literature it emerges a lack of contributions that analyze the relationship between tourism and transport. Furthermore, few studies used a quantitative approach for the analysis. This paper attempts to consider various aspects related to transport in particular to HSR using logistic regression econometric models.

⁶⁰ Barros & Assaf, 2012, p.224.

⁶¹ Valeri, Pagliara & Marcucci, 2012.

2. The lessons learnt from the two cases studies of Paris and Rome

A comparative approach has been chosen to analyse the importance of HSR services in the choice of a tourism destination. In order to present our cases studies (2.2), both the HSR system in Italy and in France are first explained (2.1). Roma and Paris are studied as destinations by themselves, but also as hubs to potentially reach other destinations, served by HSR (2.3).

2.1 HSR in Italia and France

In Europe the first HSR line was the "Direttissima" Rome-Florence. Designed at the beginning of the sixties, it was built during the seventies and since 1978, the first section was operational. This was a specific response to the poor quality of the conventional rail route between these cities, which was also the main link between Rome and Northern Italy. The first HSR link in France, between Paris and Lyon, was opened in 1981; the Hannover-Wuerzburg HSR line was opened in the second half of the eighties in Germany; while in Spain the section Madrid- Cordoba-Seville of 470 km long was inaugurated in 1992.

The development of the High Speed/High Capacity network in Italy is embedded in the wider context of the Trans European corridors. In 2000 Italy had 248 km of HSR line, those from Rome to Florence; around half of those of Germany and Spain and even one fifth of those of France. In 2006 there were 562 km due to the opening of the Rome-Naples and of the Turin-Novara sections, but Spain in the same period passed from 470 to 1 225 km. In 2013, 923 kms are in operation. Once the whole HSR project is completed in 2014, most major cities will be connected to the network (Figure 2). The key objective for the construction that is currently underway is to raise the Italian rail network to the best European standards and to improve its capacity. After the completion of the HSR system there will be a reduction in travel time between the major cities connected of almost 40-50%. In addition to HSR lines, there is also the High Capacity (HC) rail lines consist in speeding up and increasing the capacity of the existing rail lines. In this case, the new rail lines have lower speed limits, but at the same time they allow a better service. An example of this type is the Regional Metro System (RMS) project of Naples and Campania region in Italy⁶².

The national Italian network and operations are owned by FS (State Railway) Holdings, a fully government owned company. It has three key operating subsidiaries: Trenitalia operates all freight and passenger trains, including the HS trains, RFI (Rete Ferroviaria Italiana) manages the infrastructure, and TAV (Treno Alta Velocità SpA) is responsible for the planning and construction of the new HS infrastructure. In the last year, a new operator named Nuovo Treno Viaggiatori

⁶² Cascetta & Pagliara, 2008.

(NTV) (New Passengers' Train) is in competition with Trenitalia. Italo, the new HS train, has been operating since March 2012.

In France, since the 1980's, HSR and train services have been mainly developed through radial axes from Paris. In 2011, the HSR system was 30 years old and 2 036 km long in 2013 according to UIC. The South East HSR, linking Paris and Lyon was inaugurated in 1981. It is the first axis of a star network around the French capital. It reproduces the historical morphology of French rail network, centered in Paris. HS Trains (HST) reach the speed of 320 km/h and use a HS dedicated line network, offering performance and frequency. However, the HSR service is specific in France. HSR network is connected to the conventional rail network, and HST rolling stock is compatible on both networks, allowing a large and direct accessibility of HSR services in French territory. In France, there are less than 20 HSR stations but about 200 stations served by HST (Figure 4).

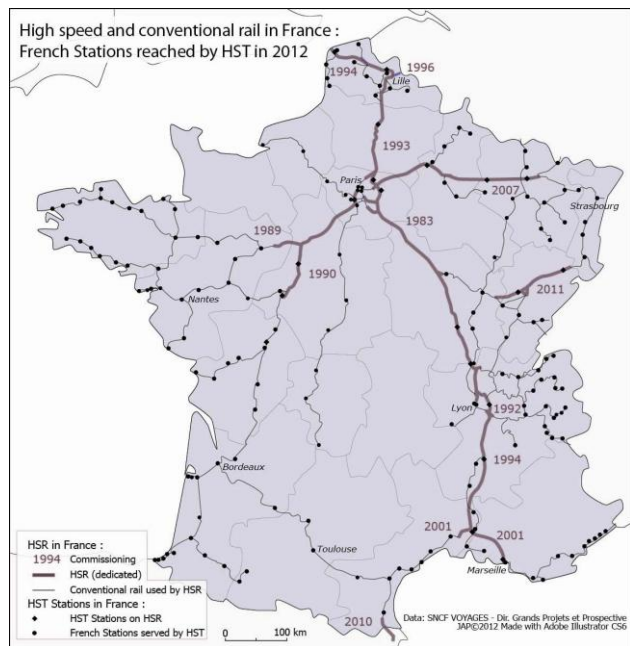
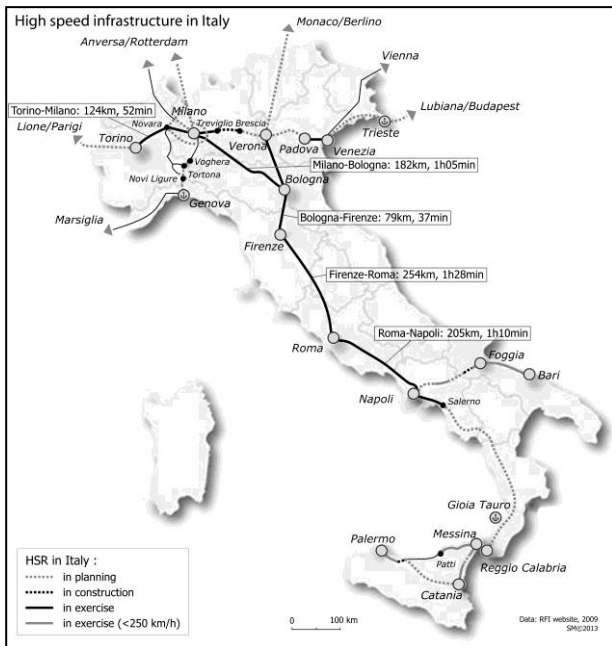


Figure 3: The HS/HC rail system in Italy

Figure 4: High speed lines and high speed rail services in France

The HSR service of Paris destination is provided by 4 main central stations (Paris Lyon, Paris North, Paris East and Paris Montparnasse Central Train Stations), and completed by 3 regional stations (Massy HST Station, CDG Airport HST Station and Marne-la-Vallée Chessy HST Station). Each central station is served by a line linking to a specific area in France: south west in Paris Montparnasse Station, south – south east in Paris Lyon Station, east in Paris East Station and north in Paris North Station. These 4 stations are departures or terminal stations. Transfers between two central stations cannot be made by train and are not easy.

The development of the HSR network is based on nested stakes: reach of technological progress, commercial strategy, French planning, European positioning etc. According to the French national railway company (SNCF), over the years, 2 billions of passengers have travelled with French HST (TGV) and over 83% of French use it at least once. It is a commercial success and a technological showcase for the French historical operator. The French network is also well connected to European network. The SNCF is operating on French lines with TGV, and on international ones in partnership with European operators (Eurostar, Thalys, Lyria etc.). Since 1997, SNCF and the rail infrastructure manager, RFF (Réseau Ferré de France), have been separated. But, the French government is working on a new rail reform (2013), which will bring changes in few months.

HSR systems seem to represent the present and the future of transport investments. The European Commission foresees that, by 2050, medium distance transport of passengers will take place by train including HST⁶³ and many are the expected impacts.

2.2. HSR and tourism in Paris and Rome

In order to investigate the impacts of HSR systems on tourists 'choice, two case studies will be analyzed. The first one is that of Rome in Italy where a Revealed Preference survey was employed from the 16th of April till the 5th of May 2012 (from 7:00 a.m. till 8:00 p.m.) (Valeri et al., 2012). The locations chosen were Termini rail station and two famous tourist places like Colosseo and the Vatican⁶⁴. 241 complete interviews were collected and the sample consisted of 152 individuals (63%) men and 89 women (37%). The age range was between 18 and 74 years old (mean = 39), 64% of them were unmarried. 87% of travels were made in group (the remaining 13% travelled alone), mainly with family (41%) and friends (42%). 65% of respondents attended high school and 34% of them had a bachelors/graduate degree or other professional certifications (1%). Most of respondents were dependent-workers (44%) or freelance (19%). Income of 23% of the sample was less than 500€, 37% between 501 and 1 500€, and 21% between 1 501 and 2 500€.

The second case study is in Paris, an international touristic destination and also a major railway node in France and Europe. Both case studies are based on a random sampling technique and have not been weighed.

In the case of Paris, the survey was employed from the 26th of October till the 2nd of November 2012 (from 7:45 a.m. till 7:00 p.m.). The location chosen were two famous touristic places in Paris, i.e. the Eiffel Tower and Notre Dame Cathedral, and Paris Lyon Central Train Station. It is the first Parisian Station served by HST, reach by the historical line Paris-Lyon. Also, this station has the

⁶³ EC, 2011, p.9.

⁶⁴ Valeri, Pagliara & Marcucci, *op. cit.*

highest HSR frequency of Parisian stations, about 31,8 million of passengers in 2012⁶⁵. 226 complete interviews were collected, with a highest representation of women (58%) than men (42%). This highest representation of woman in the French case, comparing Roma's case, is coherent with touristic data in Paris⁶⁶.

In Paris, age ranges from 18 to 73 (mean of 38), and tourists from 25 to 44 years old are the most represented ones (43%). For this sample, 32% of the tourists were singles and 68% partnered. 172 respondents (76%) were travelling in group, mostly with family (58% of the respondents) or friends (19%). Most of the respondents have university degrees (74%), 19% attended high-school and 7% junior high-school. Respondents were employees (33%) and managers or executives (23%). Freelance were less represented than in the Rome case study (13% of the French sample). About 20% of the respondents were students (15% of students and 4% of student employees). For 55% of the sample, the income was more than 2 500€ per month, and actually more than 4 500€ for 22% of the respondents. 10% of them have an income lower than 500€.

Concerning the transport mode used to arrive in Rome the most used were the airplane (35%), intercity rail (33%) and HSR (27%). A small percentage chose car, conventional train and coach (respectively 3%, 1% and 1%). For obvious reasons, the airplane was used mainly by foreigners even if it was also used by a limited number of Italian respondents (14%). In the Parisian case, 110 respondents came by HSR (49%) and 116 chose other modes (51%). Plane was used by 34% of the sample, with higher rate for foreign tourists (52% of foreign respondents). However, 38% of foreigners chose HSR. According to local authorities, French tourists and also European ones are significantly coming to visit Paris using HSR⁶⁷. For French tourists, only 8% of them were using plane and 64% HSR. 15% of the sample chose to come by car and only 2% by train. This rate is low, especially comparing to Roma case study. It can be explained by the organization of French HSR services, reaching destinations on HSL and on conventional ones.

The length of trip (including departure from home, arrive in Rome, travel to other cities, overnight and return home) was on average 7 days. Moreover, 5 days is the average duration of the stay (consisting of nights in Rome and in other cities). These results are influenced by the fact that the interviews were administered in a period of time in which there were short national holidays. The budget available was on average 745€, while the estimated spending of this budget was 701€. Therefore, the budget generally was almost all spent during the holiday⁶⁸. About the length of trip in

⁶⁵ According to the SNCF, for this last year, the traffic is higher in Paris North Central Station (31,9 million), due to the renovation of Paris Lyon Central Station.

⁶⁶ CRT, 2012.

⁶⁷ CRT, *op. cit.*

⁶⁸ Valeri, Pagliara & Marcucci, *op. cit.*

the French case study, the average was the same as in Rome case: 7 days. It is also the case for the average duration of stay in Paris, with 5 days. About the budget estimated for that stay in Paris, it was an average of 1 050€, from less than 50€ to 12 000€⁶⁹ (based on 178 respondents). The budget spent was lower, with an average of 772€ (based on 108 respondents), mostly because almost all tourists interviewed in Paris Lyon Central Station were arriving and had not yet the opportunity to spend money.

In the case of Rome, only the 26% of the respondents were positively influenced by the presence of the HSR for the destination choice. The motivations were mainly due to the ease access to the HSR station (28%) and to the speed to reach the destination (27%), follows, the reduced travel time (13%). The remaining 74% chose Rome for a holiday independently of the presence of HSR. The main motivation is due to the high cost of the HSR ticket (70%). 87% of respondents who were influenced by HSR in their destination choice were Italians and arrived in Rome with HSR (97%) and interregional low speed train (3%); a limited group of respondents (13%) were foreigners using the airplane to get in Rome. Among those for which HSR did not influence the choice of destination, 70% stated that the cost of the ticket is very high.

In the French case study, 49% of respondents were positively influenced by the presence of HSR in the destination choice, especially because of the speed of the travel (94%), and also for the good accessibility of both departure (75%) and destination stations (72%)⁷⁰. Frequency of the service (56%) and the decreasing of the travel time in case of new services (51%) were also important motivations. That last point was very important in the Rome case due to the major developments in the network of the last decade. In the case of Paris, HSR was the third main motivation after cultural offers (83%) and historical and architectural landmarks (81%). Gastronomy (47%), presence of relatives in the Parisian area (46%) or personal events (42%) were also important motivations for visiting Paris. The French tourists were more sensitive to HSR services in the choice of that destination (60%). Also, 75% of the respondents influenced by HSR services came by HST. 51% of the sample didn't think that HSR was a motivation for choosing Paris. Actually, 51% of respondents did not use HSR to come to Paris. The cost of the ticket supports that choice (36%), but not as much as in the Rome case study, and the duration of the travel (34%) was almost as important. The French tourists were more sensitive to the price. The convenience (23%), due to the level of services, and the existence of the service (a possible HSR offer) (19%) had a strong influence for not choosing HSR.

⁶⁹ It was difficult for tourists to respond to questions about estimated and spent budgets, sometimes because respondents did not feel comfortable to speak about money, other times because they had problems in estimating the budget or because they just arrived, and could not say anything about money spent.

⁷⁰ For that question, respondents could choose several answers.

84% of the respondents were willing to revisit Rome for another holiday. They were mainly Italians using intercity (43%) and HSR services (35%). Those who intended to return to Rome were driven by the richness of the historical, artistic, monumental heritage and cultural events (75%). On the other hand the fact that Rome was too expensive discouraged tourists to revisit it. Concerning the case study of Paris, 98% of the respondents wished to revisit this destination. Their motivations were mostly linked to their wish to discover more (40%) and due to the attractiveness of the destination (36%). The presence of relatives was a strong motivation (27%), more important than the touristic offers (20%). Both French (99%) and foreign tourists (97%) wished to come back. This percentage was high, independently of the transport mode used to reach Paris: 98% of them who came by HSR wished to come back.

2.3. HSR and tourism from Paris and Rome to near cities

In the case of Rome 88% of the respondents were not influenced by the HSR presence to visit others cities connected with a HSR service close to Rome; this was mainly due to the high cost of the HSR ticket (47%) and their holiday's limited time (44%)⁷¹.

For the 12% of the sample, the HSR had promoted the visit to other neighbouring cities: Naples (38%), Florence (26%), Venice (21%), Milan (9%) and Bologna (6%). Their motivations were mainly the reduced travel time (42%) and the accessibility to the city center (29%). 93% of respondents that used HSR to move towards other cities were foreigners and arrived in Rome with the airplane.

In the case of Paris, 20% of the respondents were visiting another place during their travel. They were 43% influenced by the HSR services for choosing to visit others places, and 53% were actually using it, and in several cases, then could not reach it by HSR (too far, no offers etc.). For those respondents visiting other destinations, 61% were foreign tourists but they are less sensitive than French tourists to HSR services. However, influence of HSR was higher than in Rome case study, and mostly associated with the speed of the journey. Differences between the HSR systems can explain especially in the number of destinations served in the France. For tourists visiting other destinations and not influenced by HSR (57%), they mostly chose other mode alternatives. Cost was not as significant as in Rome case study.

3. Modeling the willingness to revisit Rome and Paris

A further quantitative analysis has been carried out. Regression models have been specified and calibrated to identify the factors influencing holidaymakers to revisit Rome and Paris.

⁷¹ Valeri, Pagliara & Marcucci, *op. cit.*

The literature on logistic regression is large and has been growing since 1970 especially in social sciences and educational research. These models have been extensively applied also at the tourist demand analysis⁷² especially to explain the decision to do/not to do a holiday. In both case studies, the probability of revisiting the city has been specified according to a very simple linear regression model:

$$\text{Predictedlogit(REVISIT=1)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots \dots \beta_N X_N \quad (1)$$

where the variables considered are in the following reported:

AGE_18-24	dummy variable equal to 1 if the tourist's age is between 25-44; 0 otherwise.
AGE_25-44	dummy variable equal to 1 if the tourist's age is between 25-44; 0 otherwise.
GENDER	dummy variable equal to 1 if the tourist is male; 0 otherwise.
NATION	dummy variable equal to 1 if the tourist is Italian/French; 0 otherwise.
UNIV	dummy variable equal to 1 if the tourist attended the university; 0 otherwise.
MARITAL_STATUS	dummy variable equal to 1 if the tourist is married; 0 otherwise.
INCOME > 2.500€	dummy variable equal to 1 if the tourist has an income greater than 2.500€; 0 otherwise.
TRAV_FRIENDS	dummy variable equal to 1 if the tourist travel with friends; 0 otherwise.
TGV	dummy variable equal to 1 if the tourist was influenced by the presence of HSR; 0 otherwise.
QUALITY_PROMO	dummy variable equal to 1 if the tourist is influenced by the promotion of Roman heritage resources; 0 otherwise.
SATISF_PASTEXP	dummy variable equal to 1 if the tourist is influenced by a past experience in Rome; 0 otherwise.
VISIT_RELAT	dummy variable equal to 1 if the tourist visit relatives at destination; 0 otherwise.
ARCHITECT	dummy variable equal to 1 if the tourist is attracted by the architectural sites at destination; 0 otherwise.
MULTI_DEST	dummy variable equal to 1 if the tourist can visit also from the chosen destination another city; 0 otherwise.
EVENT	dummy variable equal to 1 if the tourist is attracted by events at destination; 0 otherwise.
TRDURAT ≤7 DAYS	dummy variable equal to 1 if the tourist's holiday stay is less than 7 days; 0 otherwise.
TRCOST	Travel cost in Euro.

The type of tourists that most likely will revisit Rome and Paris will be analyzed, given their socio-economic, touristic and transport related attributes. The dependent variable is the willingness to revisit Rome or Paris (Yes: 1, No: 0), the independent variables are the attributes above listed. Estimation results are reported in Table 1. In the case of Rome, all the parameters are significant and of the expected sign (except TRCOST that has a correct sign but is not significant and GENDER is not significant as well). Indeed, the satisfaction of past experience (SATISF_PASTEXP) has a positive impact on the probability to revisit Rome; also the holiday stay less than 7 days (TRDURAT ≤7DAYS) has a positive impact to return to Rome and visit other places. Concerning the socio-economic characteristics the tourist that has a high probability to revisit Rome is aged between 25-44 years old and has an income higher than 2 500€. With respect to nationality, Italians have a higher probability to revisit Rome and the negative value of the MARITAL_STATUS means that singles are more likely to come back. Transport characteristics seem not to have a big impact on the destination choice. Indeed, although the cost of transportation has a correct sign, it is not significant, which means that is not an attribute relevant to have an

⁷² Witt & Witt, *op. cit.*

influence on destination choice. Nevertheless, the quality of promotion of Roman heritage resources is important. The main outcome to the Rome case study is that Rome is Rome! Tourists will revisit it independently on the presence of HSR.

In the case of Paris, all the attributes are significant and of the expected sign. Tourists that are willing to revisit Paris are younger than the whole sample: they are aged between 18 and 24, they are French, and attending university. They travel with friends and they would like to go back to Paris because it is full of architectural sites, which is the most significant attribute, then because of they have the opportunity of visiting other places from there and because they can also visit relatives. Paris is also a city full of events and for the young people that it really a factor influencing their choice to come back. Very interesting is the TGV variable which is very significant and positive, meaning that for the young people the presence of HSR influences their choice. The variable itself embeds all the characteristics connected with TGV, i.e. high speed, reduction of travel times, the high frequency, the reliability, the easy access to the station, and so on. Moreover young people know about that reduced fares are present and so they can benefit of this opportunity for coming back.

Figure 5: Variables influencing the probability of revisiting Rome

Variable	Rome	Paris
	Coefficient (t-test)	Coefficient (t-test)
AGE_18-24	-	0.105 (1.979)
AGE_25-44	0.9187 (2.013)	-
GENDER	0.5123 (1.169)*	-
NATION	2.0659 (3.463)	0.192 (3.904)
UNIV	-	0.238 (5.111)
MARITAL_STATUS	- 2.5313 (4.538)	-
INCOME_2500	1.6932 (2.596)	-
TRAV_FRIENDS	-	0.167 (3.063)
HST (TGV)	-	0.177 (4.167)
QUALITY_PROMOTION	1.1804 (2.410)	-
SATISF_PASTEXP	1.0876 (2.370)	-
VISIT_RELAT	-	0.160 (3.416)
ARCHITECT	-	0.434 (9.712)
MULTI_DEST	-	0.172 (3.677)
EVENT	-	0.0902 (2.036)
TRDURAT_≤7DAYS	1.2795 (2.802)	-
TRCOST	- 0.2593 (0.532)*	-
R ²	0.563	0.650
R ² adj	0.411	0.595

* *Not Significant*

The different behaviour of the French might be explained considering that the Italian HSR system is recent and not well rooted, while the French HSR system is well accepted by the French and it is likely considered the means of transport most chosen by them.

Conclusions and further perspectives

This paper investigates the factors influencing destination choice for tourism purpose and the role of HSR systems in this choice. This topic is not well explored in the literature from a modelling point of view except very few contributions reported in section 1.3. Among them the case study of Rome, here compared with a new case study of Paris. Those studies show that several factors influence the choice of a tourist, like the presence of architectural sites, the quality of promotion of the destination itself, the presence of events. If HSR services are not a main factor in the destination choice, they have anyway affected the choice of Paris and Rome and differently. Also, the two cities belong to two different countries in which the history of HSR service is very different, considering the development of those infrastructures, the level of integration between transport and railway systems or again the commercial strategies etc. In France HSR is considered a real transport mode alternative, while in Italy it is a relatively new system which still needs a campaign of promotion to be well accepted among the users and therefore the tourists.

Authors hope that the findings of this study can provide useful information to analyse the link between HSR services and tourism, and also to segments and target the tourism market. Further investigation will consider new surveys to support our results in order to get more information on tourist's effective choices and also criteria of influence. However, although HSR services promote tourism mobility, it is necessary the existence and development of strong local potentiality to promote the destination and its services, as well as local strategies to develop integrated products and also specific aspects related to tourism sector such as business and urban tourism⁷³.

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⁷³ Masson & Petiot, *op. cit.* ; Bazin, Beckerich & Delaplace, 2010, 2011, 2013b.

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