Systematic Approaches for Tourism Transportation Planning: A Review

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Transport and tourism industries are closely linked. The explosion of tourism in the 20th Century contributed a great deal to the development of extensive transportation networks throughout the whole world. Transport supply comprises a broad range of modes. Transport accessibility highly influences tourism activities, which determine the level of tourists' satisfaction as well as tourism revenues. On the other hand, the influx of tourists exerts additional demand pressure on the existing transportation networks, which may result in severe traffic congestion and accidents, and even worsening environmental conditions. Needless to say, these negative impacts might keep tourists away from some destinations. Furthermore, there are many stakeholders with different objectives in tourism system. In this sense, tourism transportation planning is a complex decision-making task, which needs to balance the different objectives of stakeholders and requires the use of systematic approaches. Therefore, this paper attempts to give a comprehensive review of existing studies about systematic approaches in tourism transportation.

Key Words: *Tourism transportation planning; Tourist satisfaction; Multi-stakeholders; Touring routes*

1. INTRODUCTION

Tourism colors the world, which shall be of great value not only for economic growth, but also for social benefits. It is too short-sighted to just consider a uni-direction influence from transport as a driving factor of tourism. Tourism, in reverse, especially new forms of tourism and new destinations, also affected transport system by influencing demand.

The existing studies (Chew, 1987; Gunn, 1988; Inskeep, 1991; Martin & Witt, 1988 among others) have highlighted that the infrastructure level of a country is a determinant of the attractiveness of a tourism destination. Especially transport infrastructure, which provides the vital base for transportation services, is presumed to be an important determinant in this respect. Kaul (1985) stressed on the role of the transportation network as an essential component of successful tourism development and stated that 'transport plays an important role in the successful creation and development of new attractions as well

as the healthy growth of existing ones.' Provision of suitable transport has transformed dead centers of tourist interest into active and prosperous places attracting multitudes of people.

Even in developing countries, scholars (Wang, 2005) discovered that the transportation problems have become the bottleneck tourism development in tourist resorts of China, which needs to speed up the construction of tourism means of transportation, and construct the three-dimensional transportation network system, in order to boost the healthy development of the tourism industry, simultaneously enhance the management level of the tourism transportation.

That the provision of transport infrastructure is a precondition for the development of tourism has been posited by Chew (1987), Abeyratne (1993) and Prideaux (2000). Although many studies acknowledged the need for efficient transport as an overall element in a successful programme of tourism development, little work has been undertaken to clarify the significance of transport as a factor in destination development.

Therefore, this paper presents a critical review of recent progress in research on tourism transportation planning and management, and possible directions for future research. In comparison to a well-established, empirically grounded body of knowledge dealing with tourism or transportation activity respectively, dedicated research on holistic study in tourism transportation planning is at a relatively early stage. For research to progress further and to connect these gaps, greater critical engagement with mainstream thinking on tourism transportation planning is required as well as greater conceptual and methodological sophistication.

2. THE RELATIONSHIP BETWEEN TRANSPORT INFRASTRUCTURE AND TOURISM DESTINATION

Tourism today makes an important contribution to a city's economic success and social dynamism. Vice versa, a beautiful landscape cannot be enjoyed if there is no sound transport to facilitate its access. Tourists arriving at tourism destinations need mobility, while the transport network system is an essential service for this population, especially in cities large enough to need bus, metro and train systems. Otherwise, the influx of tourists exerts additional demand pressure on the existing weak roadway networks, which may result in severely traffic congestion and delay, decreasing the level of tourist satisfaction, even worsening the quality of life satisfaction.

As far as we known, inhabitants of developed countries, from where the majority of tourists originate, are used to modern transport infrastructure that enables high quality service. These tourists prefer to maintain essentially the same comforts as at home while traveling (Cohen, 1979; Mo, Howard, & Havitz, 1993). If the ability of tourists to travel to preferred destinations is inhibited by inefficiencies transport system such as uncompetitive prices or lengthy and uncomfortable journey, the likelihood that they will seek alternative destinations may increase.

Transport supply comprises a broad range of modes, from large infrastructures such as airports to bus network systems within cities. It is an essential utility for tourists as they move around the city, visiting urban attractions, returning to their accommodation and so on. In fact, several scholars have already stressed on the importance of transport networks and infrastructure in tourism development (Abeyratne, 1993; Chew, 1987; Kaul, 1985; Khadaroo & Seetenah, 2007, 2008; Prideaux, 2000). Further, Echtner and Ritchie (1991) explicitly pointed out that transport within destination when discussing the measurement

of destination image. Based on the background, Sarma (2003) empirically discovered that transport within destination is an important factor in promoting the attractiveness of an area as tourist destination.

Prideaux (2000) defined the transport system relevant to tourism as 'the operation of, and interaction between, transport modes, ways and terminals that support tourists into and out of destinations and also the provision of transport services within the destination.' Also, he posited that a critical mass of public infrastructure (including transport) is essential for enabling the setting up of high-quality resorts in a country. If this critical mass is not available, it may impair the competitiveness. A sound and attractive transportation systems to a large extent on quality and availability of transportation infrastructure comprising air services and airport, land transport systems and routes and water transport infrastructures as well. In fact the transport system is responsible for connecting tourism origins to tourism destinations and providing transport within the tourism destination. A destination should be easily to get to and around, particularly if the country is geographically dispersed. The transport infrastructure investments do impact on the cost and quality of tourism experience.

Research evaluating the role of transport infrastructure in tourism development is scarce. In many tourism studies, the relationship between transport and tourism is defined only in terms of accessibility; transport is regarded as a link between tourist source regions and tourist destination regions. Some studies have examined the history of tourism from the perspective of the development of various transport modes (Dickman, 1994), while others (Mill & Morrison, 1985) have taken an interdisciplinary perspective, regarding transport as only one of many components which together constitute the tourism system. In addition, models of tourism flows have been developed, but transport still had a limited role. Lundgren (1982) posited transport from a geographic perspective and analyzed tourism flows between metropolitan and rural destinations. Pearce (1981) also noted the role of transport within the context of the city as a regional staging post from where visitors travel to other centers and resorts. Moreover transport is acknowledged but subsumed to other factors that concentrate on the role of traveler flows to and from major urban centers.

3. TRANSPORTATION PERFORMANCE AND OVERALL SATISFACTION

3.1 Transportation Performance and Tourism Satisfaction

The availability and perceived quality of local transport at tourist destinations has latterly been established as exercising an influence on visitor experience, repeat visitation and overall satisfaction. Most studies of transport service quality and performance from the passenger perspective typically focus on the attitudes of local users regarding the existing public transport provision, which are productive in achieving the aim of informing the quality provision of urban public transport.

Economically, where the goal of urban tourism planning is to foster greater dispersal of the benefits of tourism throughout the city, the role of the transport network may indeed be critical (Evans and Shaw, 2002). Where an urban destination wishes to benefit from tourism, improved provision of touristic goods and services can strengthen competitive advantage (Suh and Gartner, 2004).

However, tourism planners seldom have a significant influence on public transport planning, which tends to be focus on local residents' needs rather than visitor numbers and requirements, other than where a high ratio of visitors to residents is the norm or in the case of large scale events. Page (1999)

bemoaned the lack of understanding of the relationship between tourism and transport within the context of the tourist experience. Notwithstanding the lack of detailed research in this area, the role of internal accessibility in destination quality is increasingly being accepted (e.g. ETC, 2001). Urban public transport systems may therefore not be ideal for tourists in terms of their frequency and route coverage (Law, 2002).

Further, the contribution of transport, as a secondary destination feature, to destination image and visitor satisfaction is a subject which has been commented on within the scope of wider studies of the destination experience. The adequacy of a city's transport system contributes to its attractiveness and overall image. This argument was supported by Haywood and Muller (1988, p. 456) who concluded that 'ease of finding and reaching places within the city' was a salient attribute of visitors' assessment of the quality of the urban tourism experience. Laws (1995), focusing on the attractiveness of a tourist area, identified transport as one of the secondary destination features which contribute to the attractiveness of a destination. Equally, transport is repeatedly identified as one of the key elements of the overall tourism product at a destination (Jansen-Verbeke, 1986, 1988; Gunn, 1988; Middleton, 1998; Page, 2004).

Thus, given its importance role to improve the performance quality, offering efficient urban transport can help to derive maximum benefits from tourism and to spread these benefits across the city. Indeed, better transport performance heightens comfort and efficiency during a tourist's stay. In the opposite scenario, if the ability of tourists to travel to a preferred destination is hampered by inefficiencies in the transport systems, they may well seek alternative destinations (Khadaroo & Seetenah, 2008) or the number of attractions visited, even the tourism satisfaction during their stay may fall.

Regarding for tourism satisfaction and their overall satisfaction levels, which are routinely measured using structured methods such as attribute-based models. Kozak and Rimmington (1998) noted that, whilst there is no definitive list of the attributes that contribute to destination attractiveness, they can be classified into five subheadings on the basis of previous literature reviews of destination choice, image and tourist satisfaction, namely attractions, facilities, infrastructure, hospitality and cost. Unfortunately, it may be beyond the scope of tourism satisfaction studies to investigate the detail of public transport performance from the visitor perspective, in terms of the relevant constituent dimensions and attributes.

Nonetheless, several recent studies still have found the availability and performance of transport to be a salient attribute of tourism satisfaction and destination choice, using a range of methods. Since Danaher and Arweiler (1996) was conducted at country level, which reflected visitor attitudes to longer distance, as well as local transport. Later, Qu and Li (1997) went into further detail by measuring satisfaction levels of mainland Chinese visitors to Hong Kong with a number of aspects of public transportation including variety of choices, convenience, cleanliness, comfort and efficiency and cost. A further study of UK tourists visiting Majorca and Turkey by Kozak (2001a) equally offered that transport to represent a key underlying dimension of tourism satisfaction, in as much as the perception of its quality affected the overall experience of the destination. Whilst they did identify that the availability of these transport services had a significant influence on intention to revisit other destinations in the same country. The performance of transport related attributes such as 'ease of getting around the city', and 'accessibility of the city' have also been measured in other studies of urban tourism satisfaction (Bakucz, 2002; Freytag, 2002). In comparing the effectiveness of qualitative and

quantitative techniques of measuring the importance and performance of a range of destination attributes, Pritchard and Havitz (2006) further proposed the 13 attributes measured. Especially, satisfaction with transport was not measured on the basis of transport attributes, but of overall satisfaction with each mode used. A further finding indicated that satisfaction with bus and rental car modes had the strongest relationship between tourism satisfaction and transportation.

3.2 Tourism satisfaction and overall satisfaction

The study findings underscore the fact that satisfaction with tourism services contributes to satisfaction in leisure life domain, which in turn contributes to life overall satisfaction. It has been indicated that tourism satisfactions with each component of the destination have significant, positive, and direct effects on overall satisfaction. Tourist satisfaction is important to successful destination marketing because it may affect expectations for the next visit (Kozak 2001), and may also have some learning effects on tourists' future decisions. Another outcome from the post-evaluation of travel is word-of-mouth information. The importance of word-of-mouth information in travel decisions has been long recognized by both researchers and marketers (Boulding et al. 1993; Zeithaml, Berry, and Parasuraman 1996).

Currently, there is a great amount of research focusing on measurement of tourism satisfaction. Kozak (2001) gave a comprehensive review of the existing research and identified four approaches: expectation-performance, importance-performance, disconfirmation approach and performance-only approaches. In addition to the analysis of the overall satisfaction in terms of tourism, more and more research has been devoting to investigating attribute-level satisfaction recently (Oliver 1993; Chi and Qu 2008; Hasegawa 2010). Since every tourism destination is composed of diversified components, understanding tourists' satisfaction with each component is thus essential to destination managers for improving products and services. Until now, a number of studies have been carried out to investigate tourists' satisfaction with the attractions (Bigne, Andreu, and Gnoth 2005; Martin-Ruiz, Castellanos-Verdugo, and Oviedo-Garcia 2010; Rojas and Camarero, 2008), the transportation (Kim and Shin 2001), the accommodation (Tsaura, Chiub, and Huang 2002), the shopping facilities (Wong and Law 2003; Chang, Yang, and Yu 2006).

Furthermore, some studies attempt to examine the influence of attribute-level satisfaction on the overall satisfaction. According to Oliver (1993), attribute satisfaction has significant, positive, and direct effects on overall satisfaction. As pointed out by Veloutsou et al (2005), tourists' overall satisfaction is an aggregation of satisfaction with each service aspect. Likewise, many other studies also stressed out that tourists' satisfaction with individual component of the destination leads to their overall satisfaction (Mayer et al. 1998; Hsu 2003; Chi and Qu 2008). Sequentially, Pizam and Ellis (1999) viewed tourists' overall satisfaction as a function of satisfaction with the individual elements of the destination, such as accommodation, weather, natural environment, social environment, etc. Similar idea is also adopted in study by Song et al. (2012) to develop tourist satisfaction index. Understanding the relationship between components of tourism satisfaction and overall satisfaction will facilitate management to concentrate on the major influencing factors that contribute to high level tourists' overall satisfaction.

4. CONFLICTS BETWEEN TOURISM DEMAND AND TRANSPORTATION SUPPLY

The relationship between tourism demand and host environments is quite complex, especially the local transportation supply. There are conflicts within the host community as well as between the host community and tourists; this creates a mismatch between host supply (especially transportation supply) and tourism demand of recreational services that need to be addressed to promote the tourism development strategy. Logically, mobility is an essential issue for tourists travelling large cities, since it is a crucial factor for their comfort. It also facilitates the spread of benefits across the city, especially on accommodation, food, drink, local transport, entertainment and shopping activities. However, as far as we known, city planners always consider that it is possible to derive the maximum benefit from tourists merely by holding supply at the same level, and tolerating a certain degree of congestion during tourist seasons. This would explain why in tourist seasons we find severe congestion in urban transportation systems, while in the rest of the year the same supply can provide adequate service for local citizens.

The main reason for residents' trips is work related travel. Simultaneously, tourists need for intensive mobility via the public transport system, which contains bus, metro and train network. That brings an obvious demand pressure for urban mass transportation. Unimaginably, the additional demand pressure from tourism imposes negative effects on local commuters in terms of comfort and congestion, given the supply invariance confirmed by the present study. In that case, tourist arrivals imply a negative influence on local users of public transportation by making travel and access less comfortable.

As a consequence, planners must be aware that regular supply in peak-time periods that coincide with high tourist arrivals can aggravate the competition for limited resources and urban spaces between residents and tourists. Therefore, there is a balance that has to be considered and managed ignoring negative services provided less efficient and less convenient, and may damage the reputation of the city as a tourist destination in the long run.

Indeed, in congested cities with weak public transport networks especially in peak tourist season, the influx of tourists exerts additional demand pressure on the transport system. Tourists compete with residents for limited urban resources, even cause heavy congestions. Tourism causes negative externalities for the mobility of local residents, who tend to object to tourism for this reason and blame the local authorities for the lack of public planning.

Several studies latterly have analyzed residents' and tourists' attitudes and quantified the welfare effects of tourism. This related literature is vast and spans over different policy goals (e.g. Environmental protection, development, social impact assessment, recreation demand modeling) and methods (e.g. attitudinal surveys, revealed preference methods, stated preference methods, etc.). In contemporary, Oscar Saenz-de-Miera (2012) showed how the tourist pressure variable is an important determinant in explaining the different alternative indicators of traffic congestion and hyper-congestion, for different roads. Although initially congestion issues were not addressed within the main tourist road transport externalities, recent trends toward a higher use of private or hired cars in the destination (Palmer, Riera, & Rosselló, 2007) and the popularization of the city-break holidays have led to a growing concern and interest about the contribution of tourism to road traffic congestion, fueled by the interest of authorities in applying economic instruments for its regulation (Aguiló, Palmer, & Rosselló, in press). Conscious of how the presence of congestion can damage the tourist image, congestion has been recently pointed out as one of the main negative impacts of tourism (Cui & Ryan, 2011). One of these problems is traffic congestion, which can reduce the time available for participation in tourism activities and could be

perceived as an unsatisfactory experience by visitors, having a negative effect on a possible future visit (Alegre & Cladera, 2006) or even lead visitors to seek out alternative destinations (Dickinson & Robbins, 2008). Since the seasonal fluctuations in traffic demand are usually affected by the social and economic activities of the area being served by a highway (TRB, 2000), the issue of congestion is especially relevant in tourist destinations that have witnessed an exponential growth in the number of tourists in relatively short periods and should expect further growth in the number of arrivals, as are suggesting the main international organizations (i.e. UNWTO, 2009b; WTTC, 2007).

Most research has been dedicated to analyzing the effects of the development of transport linking source markets and tourist destinations. Kaul (1985) emphasized the importance of the transport system as a key role in developing tourism attractiveness and activities. Chew (1987) indicated how the expansion of air transport allows the expansion of the range of available areas. Crouch and Ritchie (1999) noted the competitive advantage that a proper supply of infrastructure – particularly transport infrastructure – provides for tourism development. Recently, such as the studies by Naude´ and Saayman (2005) and Khadaroo and Seetanah (2007, 2008), provided multivariate empirical analysis on the relationship between transport supply and tourism demand development. In terms of growth of the low-cost model, by providing more frequent and cheaper transportation to tourist destinations to advocate expanding international intra-continental tourism (Bel, 2009).

Further, some authors have paid their attention on the role of transport within the wider destination area. Pearce (1987) focuses on tourist transportation between a city – considered as a locational base – and other tourist destinations around that city. Nanni Concu (2012) proposed that there were conflicting preferences within the host community as well as between the host community and tourists. This creates a mismatch between residents' supply and tourists' demand of recreational services that needs to be addressed to promote the best tourist development strategy.

Pertaining to providing access and mobility within a tourist attraction or destination, papers by Echtner (1991) and Echtner and Ritchie (1991) explicitly demonstrated transport within destination when discussing the measurement of destination image. Given for this, Sarma (2003) introduced this factor in his study on Northeast India as tourist destination, and empirically discovered that transport within destination is an important factor in determining the attractiveness of an area as tourist destination.

Subsequently, a growing number of studies paid attention to assign the responsibility of leisure activities and holidays in generating externalities of road transport, such as accidents (Keay & Simmonds, 2005; Levine, Kim, & Nitz, 1995; Rosselló & Saenz-de- Miera, 2011) and air pollution (Dickinson & Robbins, 2008;Rendeiro & Ramírez, 2010; Rosselló & Saenz-de-Miera, 2010).While many studies of traffic congestion have focused on pricing (Hau, 1998; Li, 2002), alternative ways to measure congestion (Taylor, Woolley, & Zito, 2000; Wang, Quddus, & Ison, 2009) and explaining the variables that compose the fundamental diagram of traffic flow (Del Castillo & Benítez, 1995a, 1995b; Hall et al., 1986; Koetse & Rietveld, 2009) through a set of determinants that includes dummies to account for specific holidays and/or vacation periods along the year (Cools, Moons, & Wets, 2007; Keay & Simmonds, 2005; Liu & Sharma, 2006).

5. TOURISM TRANSPORTATION PLANNING

Given that efficient urban transport system, can contribute a great deal to deriving maximum benefits from tourism and spreading these benefits across the destination. In view of the key role of multi-stakeholders in sustainable tourism (ST), in addition conflicts between tourism demand and transportation supply, the sustainable development of tourism is urgently in need of effective and feasible tourism planning and management, so as to provide theoretical support for policy making.

Normally, tourist transportation planning of natural resource affects numerous individuals and groups, namely the "stakeholders". Stakeholders refer to those groups or individuals who are associated with tourism development initiatives and therefore can affect or are affected by the decisions and activities concerning those initiatives, including tourists, residents, government and even local businesses. Tourism under supply view, as an industry, which is the aggregate of all stakeholders interact with each other to resolve their divergent business objectives across producing commodities for the travelers.

The extensive body of literature on sustainable tourism comes into being. Collaboration among key players is a fundamental ingredient in sustainable tourism transportation development, Its successful implementation is an emerging and important theme, which can be of great value only for current and future economic, social and environmental impacts, but also for addressing divergent multi-stakeholders' needs. The organizational structure of a destination is perceived as a network of interdependent and multiple stakeholders (Cooper, Scott, & Baggio, 2009; d'Angella & Go, 2009), on which the quality of the experience and hospitality offered by the destination depends (Hawkins & Bohdanowicz, 2011; March & Wilkinson, 2009). Stakeholder collaboration represents a widely accepted approach to solving the problems associated with a lack of understanding and few shared common goals between the many stakeholders often involved in tourism development (Fyall & Garrod, 2005; Hall, 2000; Jamal & Getz, 1995; Ladkin & Bertramini, 2002). Currently, a large number of studies have called for stakeholders' involvement in the sustainable development of tourism (e.g. Dodds, 2007; Getz & Timur, 2005; Hall, 2007; Ryan, 2002).

Responding to that case, lack of stakeholder involvement, lack of government support, lack of leadership, lack of awareness and lack of coordination (e.g. Dodds, 2007; Timur & Getz, 2009), implementing ST with multi-stakeholder processes requires leadership, incentive structures, priority setting, long-term vision, resilience and financial resources (Elkington, 2004; Farrell & Twining-Ward, 2005; International Institute for Environment & Development, 2002; Organization for Economic Co-operation & Development, 2001). The stakeholder concept aimed to coordinate the multiple relationships involved (Freeman, Harrison, Wicks, Parmar, & Colle, 2010) and assumed that managerial decisions and actions are the key factors that influence organizational-stakeholder relationships (Phillips, Berman, Elms, & Johnson-Cramer, 2010).

However, the diversity and heterogeneity of tourism stakeholders render the process complicated. Many authors contended that the problem of implementing ST lies in its practical application and in the complexity of its parental paradigm (e.g. Dewhurst & Thomas, 2003; Hardy et al., 2002; Harris, Griffin, & Williams, 2002; Sharpley, 2000). The various terms that are assumed to be synonymous with ST and their alternative approaches to tourism development have been controversial (Butler, 1990; Hunter & Green, 1995; Mowforth & Munt, 1998; Pforr, 2001; Wheeller, 1991). As Robson and Robson (1996) asserted, the method of delivering ST is not fully explored and although the concept has been widely endorsed, routes and directions for its practical application remain unclear (Wall & Mathieson, 2006).

In terms of the tourism routes, Hall (1999, p. 181) identified four different roles with respect to the supply side of tourist transport. First, linking the origin market with the tourist destination; second, providing access and mobility within a wide destination area (region or country); third, offering access and mobility within a tourist attraction; and providing travel along a recreational route.

As for some new technologies for supporting tourists in planning the trip, on the one hand, they offer a large volume of tourism information allowing tourists to gather details about the different tourism destinations along with the activities which they may carry out in destinations, visiting times, up-to-date rates, etc. On the other hand, tools are available which help tourists with purchasing process online, up to when they book the product and make their orders. They have access to search engines, metasearch engines, price comparison websites, booking systems, etc. (Buhalis & Law, 2008; Cooper, Fletcher, Fyall, Gilbert, & Wanhill, 2007).

Some of these systems which have been developed, help tourists search for information by filtering the available information through which the information and their preferences are received (Colineau & Wan, 2001; Paris, 2002); some other systems, in addition to location, consider the user's profile (Yu, Cullot, & Aufaure, 2003), or the tourist's context (Schmidt-Belz, Laamanen, Poslad, & Zipf, 2003;Van Setten, Pokraev, & Koolwaaij, 2004; Zipf, 2002). Others consider all these elements at the same time (Kramer, Modsching, Schulze, & Ten Hagen, 2005; Kramer, Modsching, & Ten Hagen, 2007; Ten Hagen, Modsching, & Krarner, 2005a, 2005b). A few of those use multi-criteria techniques to consider the different objectives considered in planning a tourism trip (Godart, 1999, 2001, 2003), such as minimizing the distance travelled, minimizing activity costs, maximizing activity utility, with this being calculated based on the importance of each activity and the tourist's preferences, and adjusting the time spent on each type of visit based on the tourist's preference. Latterly, Beatriz et al. (2012) successfully developed a tool that provides each tourist with the itinerary best suited to their needs by using a mathematical model and interactive multi-criteria techniques.

6. CONCLUSION

Studies on tourism have grown substantially for these years, as well as transportation studies, which is published in a wide range of outlets, including books and different journals. Whilst the focus of research is still fail to identify any specific causal relationship, though recognizing the link between tourism and transport. With regard to public transport provision, there has so far been limited attention to the attitudes and experiences of visitors to tourism destinations. Most importantly, the detailed investigation of how transport which is not dedicated to tourist use influences the tourism satisfaction, even overall life satisfaction still remains limited.

According to the above studies, which have provided some evidence that local transport is a great contributing factor to tourism satisfaction, however, none have attempted to investigate in detail the specific attributes and dimensions of public transport performance which influence visitor satisfaction levels with the destination, and the relative influence of these dimensions on overall satisfaction with the destination. There is therefore clear scope for further work in this area, towards which end, it is first of all necessary to identify the attributes of public transport which are recognized to constitute transport quality and are regularly used in the measurement of urban public transport performance. In addition, the existing studies have not satisfactorily represented individual heterogeneity in tourist satisfaction analysis. It is expected that different tourists will place different levels of emphasis on each aspect of service. Such

heterogeneity can be caused by not only objective factors (e.g., age, gender, income), but also psychological factors (e.g., motivation, taste/liking, attitude).

As for the tourism transportation planning, there also remain some unsolved issues in the existing research. Firstly, lack of systematic behavior analysis to the different tourists, like tourists by car or public transit, they may have different constraints or choice behavior, even have different needs. Secondly, more studies based on the users. As far as we known, if the tourism transportation planning only considered the tourists' needs, they more likely to go to the famous attractions, even in the weekend or peak seasons, that may result to hyper-congestion in the famous ones or in the transportation network when exceed the carrying capacities; Most importantly, from the host-government view, if no one would like to go to the less-attractive spots, that may causes the resources waste and configurations imbalance, let alone of host-government and multi-stakeholders benefits. Thirdly, the existing studies were all regardless of considering the environmental control, like the carbon emission on the road transportation that may not comply with the low-carbon tourism development.

In consequence, for the future studies, tourism transportation planning is required a greater conceptual and sound methodological sophistication, which should be consider tourists' choice behavior, preferences, conflicting objectives and different existing constraints, ensure maximum overall life satisfaction for each visitor, with huge economic benefits to the host-government and multi-stakeholders, achieving the system satisfaction (Economic, Environmental, Transport, and Tourism) simultaneously under the environmental control.

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