# A DECISION SUPPORT TOOL (DST) FOR IMPROVING TOURISM SECTOR COMPETITIVENESS

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## ABSTRACT

Transportation plays undoubtedly an important role as lever for the sustainable development and competitiveness of tourism. Despite their inherent link, different motivations drive these two sectors today, and although the transportation industry provides the link between tourism generating and destination regions, the industry's role as a factor in tourism destination choice and development has not been paid the attention it demands. In addition, transportation and tourism studies fail to provide an explicit and holistic framework in which to assess tourists' transportation. Acknowledging the complex interaction between the transportation and tourism sectors, this paper initially identifies main tourist segments, as well as types of tourism destinations, in conjunction to their related mobility and needs in terms of transport facilities, in order to integrate tourist demand and transport supply. In addition, transport concepts, measures and solutions are addressed, as well as a selection of Best Practices, with the overall goal to progress towards the competitiveness of tourism. This information is then employed for the development of a practical and dynamic Decision Support Tool (DST) for *Transport related Applications on Tourism,* targeted at Tourism and Transport stakeholders, with the scope to provide suitable solutions to transport and tourism problems in a prioritised way. Therefore, the proposed tool is a dynamic repository in which the user can find all possible "combinations" of attributes between tourism demand and transportation supply for a particular tourism scenario, together with a list of value-added transport solutions to remove prioritised barriers to tourism competitiveness. The proposed DST operation includes a three-phase process, through which the tourism scenario is initially defined, followed by the identification of associated needs and barriers, for which transport solutions and best practices are finally recommended. The main use of the DST is to guide and support decision making in the tourism sector on issues relating to transport.

Consequently, it can act as a useful tool for tourism policymakers and managers to assess the transportation supply and services of their respective tourist destinations, as well as for the development of a range of transportation strategies and measures to influence the attractiveness of a particular tourism destination.

# INTRODUCTION

Tourism today is a "multidisciplinary" sector, involving various types of interrelated services, as well as other economic sectors and policies. Transportation undoubtedly represents an integral component of the tourism system, acting as lever for sustainable development and competitiveness of tourism and the economy. Tourist arrivals play an important role in the economic development of nations, and transportation infrastructure provides the link between tourism generating and destination regions, thus contributing to the successful development of new tourism destinations, as well as the growth of existing ones. Therefore, relevant authorities, as well as tourism industry stakeholders, should recognise tourism as a major trip generator, when making investment plans, as well as transportation strategic planning.

Despite the clear overlap between these two sectors, the transportation industry's role as an important factor in tourism destination development has been largely overlooked. Moreover, transportation and tourism studies have yet to conceptualise this interface by providing an explicit and integrated framework in which to assess the tourists' transportation. Therefore, acknowledging the complex interaction between these two sectors, the objective of this paper is to analyse the key issues that arise from the tourism transportation interface and to promote interdisciplinary approaches, with the scope to integrate tourist demand and transportation supply. To this end, the different tourist segments and tourism destinations along with the main tourism needs in terms of transportation facilities are identified. In addition, transportation concepts, measures and solutions are addressed, as well as a selection of Best Practices, with the overall goal to progress towards the competitiveness of tourism.

The information described in the above is then integrated into a practical and dynamic tool, namely a Decision Support Tool for *Transport related Applications on Tourism*, which will enable the user to identify possible solutions among best practices and value added services, matching transportation supply and tourism demand/supply for either a particular tourist segment or a specific tourism destination. The main use of the proposed Decision Support Tool for *Transport related Applications on Tourism* is to guide and support decision making in the tourism sector on issues relating to transportation planning, marketing, and developing appropriate strategies to influence the destination choice of tourists.

# TRANSPORTATION FOR TOURISM

By its very nature, the tourism industry is heavily dependent on transportation. Mobility represents a crucial factor for the comfort of travellers visiting a particular destination, and as unequivocally stated by Prideaux (2000), *" for a destination to be attractive, it should be easy*

*to get to and easy to get around*" . Consequently, the supply side of tourism transportation, can be classified according to the following two general categories (Hall, 1999):

1. Getting to/from destination

    - linking the source market with the host destination
    - facilitating travel along a recreational route which is itself the tourism experience, as in the case of cruising trips, scenic flights, and railway journeys

2. Getting around at destinations

    - enhancing mobility and access to and within a destination area/region/country
    - enhancing mobility and access within an actual tourism attraction

Although tourism and transportation are undoubtedly strongly linked, different motivations drive these two sectors today, in the sense that tourism providers are engaged in the increasing demand for holidays and leisure activities and view the tourists' need to travel as a necessary side-effect of the attractions offered, mostly left to transportation providers to cater for. On the other hand, the transportation industry, fails in most cases to consider tourist arrivals as a influencing factor and only seeks to improve transportation infrastructure and provide enhanced services, since the trip itself is seen solely as a 'cost' to be minimised (Schiefelbusch, Jain, Schäfer, and Müller, 2007), assuming that transportation users and, thus, tourists, think in a similar manner.

# TRANSPORTATION IN TOURISM STUDIES

In the majority of tourism studies, transportation is seen as the link between tourist generating regions and tourism destination regions. Although there has been abundant research on the analysis of factors determining travel choice in transportation literature, these have not been explored to a great extent in the tourism literature. Key related research has remained for the most part fragmented. To this end, little progress has been made into building a common framework, with the scope to assess the interaction of the tourist's needs for transportation with the significance of transportation for the tourist experience. This could possibly be explained by uncertainties about an unknown range of impacts due to tourists' travel behaviours (Becken, 2002).

Although the travel element and its role in the tourist's decision-making processes has not been paid the attention it deserves, the accessibility of a destination clearly influences its attractiveness and visitors potential. Gunn was one of the first to recognize the value of transportation, focusing on the importance of transportation linkages between a community and the attractions it served (Gunn, 1979). Along this line, Leiper (1979) proposed a model to describe the function of transportation as the means through which flows of tourists travel from their place of residence to the tourism destinations and back. Nevertheless, both studies failed to address the ability of the transportation system to influence the behaviour of tourists when travelling. Similar research was motivated by the need to develop a rigorous

theoretical model to explain the decision making process of tourists regarding destination choice (Seddighi and Theocharous, 2002).

The identification of tourism as an important contributor to climate change has lead to a clear focus on sustainable tourism and global emissions, and more specifically on the higher adverse environmental impact of long distance travellers and associated high share of air transportation, resulting to higher $CO_2$ emissions (Peeters and Shouten, 2006). Becken and Patterson (2006) discuss the types of market segments that contribute the most to global warming, whilst Gossling (2009) discusses the emerging concept of "carbon neutral destinations" and how a number of countries seek to realise this concept through their tourism industries.

Finally, a significant amount of work addresses public transportation, since tourism obviously exerts a demand pressure for local mass transportation. Related research investigates the relationship between public transportation performance and destination satisfaction (Thompson and Schofield, 2007), whilst several articles point at the need for both positive and negative measures to reduce car traffic at tourism destinations.

Based on the above discussion, the objective of this paper is to analyse some of the key issues that arise from the tourism-transportation interface and to promote an interdisciplinary approach through the development of the proposed Decision Support Tool for *Transport related Applications on Tourism*, setting the ground for further research in this field.

# DECISION SUPPORT TOOL (DST)

The objective of the Decision Support Tool (DST) for *Transport related Applications on Tourism* is to integrate information with regard to the interaction of tourism with transportation, into a practical and dynamic tool that will enable the user to identify possible solutions among value added services and best practices (if existing), matching transportation supply and tourism demand/supply for either a particular tourist segment or a specific tourism destination. The main use of the DST is to guide and support decision making in the tourism sector on issues relating to transportation. It is effectively a software tool that assists, but does not replace the decision-maker. It supports semi-structured decisions where parts of the analysis can be systematized by the tool, improving the decision-maker's insight and judgement.

## DST Main Function

The proposed DST for *Transport related Applications on Tourism* is set up as a dynamic repository of transportation concepts and solutions, as well as currently available Best Practices, aimed at removing transportation barriers to the tourism sector, thus contributing to the competitiveness of a particular tourism destination. This is provided for a particular tourism scenario, defined by either the type of tourist segment or the type of tourism destination. For each scenario defined, the DST identifies needs in terms of transportation supply, and in the case that these are not satisfied, barriers. These barriers are then ranked and prioritized and the DST checks along the available list of transportation solutions and Best Practices the one most appropriate applied to remove such barrier. Consequently, the

user can make the decision to support/promote the application and transferability of such measure/policy/action, etc. In the case that there is no available best practice, the DST recommends a new framework for research. Therefore, the DST's outputs are value-added Transportation Solutions and available Best Practices.

It should be noted that the way the DST was structured, there is limited possibility of conflicting needs for different tourist segments or tourism destinations. However, should this case arise, then it is up to the individual Decision Maker's judgement to assign the relative importance to each particular need.

# THE DST INPUT DATA SET

The function of the proposed DST described in the above is based on a defined input database that includes a list of tourist segments and tourism destinations, a list of needs with regards to transportation infrastructure and services and finally a list of Transportation Solutions and Best Practices. This database is built through the analysis presented in the following section. To this end, the different tourist segments and tourism destinations are initially identified. The characteristics of each individual tourist segment and tourism destination point out in turn to a set of specific needs in terms of transportation infrastructure and services. Based on these needs, a list of Transportation Solutions and available Best Practices are finally identified.

## Tourist Segments and Tourism Destinations

### *Tourist Segments*

The tourism literature has proposed a large number of typologies for tourists and travellers in general, mainly based on concepts and principles from the general marketing theory. Approaches range from simple common sense segmentations (where tourists are divided on the basis of a predefined personal characteristic) to multidimensional data-driven approaches where a set of tourist characteristics is used as the basis for grouping (Dollnicar, 2008). Nevertheless, the task in hand determines the type of segmentation that would be most useful.

The present analysis is focused on the European tourism and transportation. Thus, it covers a wide range of different national populations, cultures, climates, destinations, as well as various levels of transportation development, infrastructure and services. Furthermore, in this international perspective, only criteria *readily identifiable* across many national borders are considered. Therefore, for the segmentation approach, tourists are classified based on those most *prevalent* characteristics (e.g. business tourist over single person, or high income over retired tourist), considered by the authors to dictate their tourism mobility and motives, and subsequently their most common prevalent *needs* in terms of transportation infrastructure and services. To this end, the following nine tourism segments have been identified:

- High income tourists
- Disabled people
- Young people and students

- Children under 17
- Families with children
- Adults; singles or couples without children
- Retired
- New incoming markets
- Business tourists

### *Tourism Destinations*

Similarly, for the purpose of the analysis, this section sets out a brief outline of the main types of tourism phenomena identified (CONCERTOUR Deliverable n3.1, 2009):

- Urban tourism (including business tourism)
- Mountain, resort based tourism
- Sun, beach and coastal tourism
- Rural and nature tourism
- Roundtrip
- International second home
- Large events
- Theme park and peri-urban attractions

There are several other types of tourism phenomena, such as nature tourism, eco- tourism, event tourism, etc. However, for the purpose of the current analysis only the above six are considered.

## Tourism Needs

This section analyses the needs with regards to the interaction of tourism and transportation for two distinct categories, travelling to/ from a destination and travelling within a particular destination.

### *Travelling to/ from Destination*

A complex array of processes appear to influence the characteristics of tourism travel behaviour, such as socio-economic, demographic and cultural influences, cost, time and convenience contingencies, as well as attitudes, perceptions, preferences and routine behaviour (Dallen, 2007a). Several authors have mentioned the infrastructure base of a country as a potential determinant of the attractiveness of a destination (Khadaroo and Seetanah, 2007; Lumsdon, 2006). Furthermore, the competitive market for tourist travel shows that transportation operators are increasingly becoming aware of the need to provide a travel experience that is both pleasurable and meets customer expectations (Dallen, 2007b). Therefore, designing services for customer comfort, security, and relaxation are key elements. Adding to these, the usual assumption that travel is a cost, and that time spent in travel is a disutility, does not always apply to tourist travel. Leisure trip makers are less sensitive with regards to travel time, while the cost is the most important factor. Tourists frequently derive pleasure from driving as a recreational activity and the value attached to the

experience of sightseeing is high relative to the disutility of travelling (Gartner and Erkkila, 2004).

Further to the above, tourists have a greater need for pre-travel information to plan a trip. The majority of tourists book their own trips and have highlighted the importance of lack of information about modes of transportation available for the final 'leg' of the journey, between the main transportation corridor and the holiday destination, which in the end could dictate the mode of transportation used for the entire journey (GOSW, 2002). With regards to information, the evaluation of various destination websites identified substantial weaknesses in all e-Governance aspects and a lack of co-operation (links) between tourism web sites and main city web sites (KITE Project, Deliverables 19-20, 2008). Another important point that should be highlighted is the insufficient travel information for disabled people.

The most common transportation mode for travelling to/from a particular tourism destination is air transportation or private car, since in many cases there is lack of integration and harmonisation of different transportation modes. In terms of rail for example, long journey times, low service frequencies, the difficulties with transporting luggage by rail, and the perceived (as well as actual) cost difference between train and car use are recognised as specific challenges in relation to transportation and tourism (GOSW, 2002). Furthermore, there are rare cases when transport of bicycles by train or airplane is possible. On the other hand, given the ageing population travelling, the need arises for senior/ disabled equipped transportation facilities. This last aspect is also an important issue under the passenger rights initiatives.

Finally, environmental sustainability is gaining increased attention usually in terms of protecting the local and global environment from damage through the management of visitor impacts at a destination or site level. The transportation focus is on the means by which they arrive and travel within a specific area, thus encouraging people to visit without their cars and/or use other modes within this area (Guiver, Lumsdon, Weston and Ferguson, 2007).

Based on the identified obstacles described in the above, a preliminary list of key needs for tourists travelling to/ from a destination is the following:

- The degree of accessibility defined by two key factors: travel time and costs, as well as by travel comfort, safety and security. In addition, with regards to scheduled services (air, ship, rail or intercity bus), the frequency of service and the convenience (related to time period in the day) constitute key factors.
- An accessible, high-quality air traffic network, for example, in terms of routes, frequencies, and number of destinations offered particularly in relation to the need to reinforce the number of low cost routes.
- A well-developed ground transportation network, including roads, railways, mass transit, sea port facilities, and inland waterways.
- Broad coverage of Information and Communication Technologies services.
- Ways to promote sustainable tourism.
- Specific consideration and provisions for certain vulnerable tourist types, such as disabled, young, etc.

*Travelling Within Destination*

Gronau and Kagermeier (2007) focused on the necessary key factors for successful tourism public transport provision, stressing the need for choosing a tourist demand oriented approach and realising the importance of additional accompanying efforts in the areas of marketing, transparency of the public transport service, quality and the influence of the existing conditions for private car use. Seasonal traffic congestion accentuated by the tourism influx is typically the most important bottleneck with regards to the mobility within a tourism destination. Furthermore, there is the associated heavy environmental impact of the private car in terms of energy use, carbon dioxide emissions, poor air quality, congestion, and excessive noise (Becken, Simmons and Frampton, 2003).

There are a number of mitigation measures considered as best practices: Physical measures, such as bypasses, pedestrian areas ,traffic restraints and the functioning and layout of public car parks, are known as ‘‘sticks’’, whilst mobility management measures such as promotion of alternatives are known as ‘‘carrots’’. However, reducing congestion without discouraging visitors requires the implementation of a tourist-targeted parking pricing and public transit system, motivating them to park their cars upon arrival and either walk or use public transportation. Similarly, the bus network, has to be sufficiently attractive to encourage a modal shift from the car to public transport.

Rail transport has a potentially significant role to play for the tourism industry, since it provides visitors with an alternative and more sustainable transportation mode to congested road networks, whilst being at the same time a tourism attraction in its own right.

Pricing and ticketing are also important elements, and there is a strong trend in favour of a day ticket valid on the entire transportation network. In many cases, day or weekly tickets and fares had been heavily discounted so as to be attractive to price-sensitive car-users and those on low incomes.

Moreover, most tourists refer to the need for core timetable information, better signage and information within the destination. Visitors can be motivated into using modes of transportation other than the private car , when good advance information and coordination of modes for leisure trips are provided (Wilhelm and Posch, 2003), as well as properly selected guidance signs.

Consideration should also be given to the disabled/ elderly travelers, since studies suggest that elderly and/or retired have a negative attitude towards driving and walking, when compared to public transportation (Lucas and Archilla, 2007).

Another issue which is relevant nowadays is the fact that tourism destinations and tourists have been ‘soft targets’ for terrorist activities. Paraskevas and Arendell (2007), therefore, stress the importance of developing a strategic framework for terrorism prevention and mitigation in tourism destination that, amongst other, must include related transport authorities.

Finally, with regards to the management of mobility within a destination, a key factor to be taken into account is the needs of the local community, where residents tend to project responsibility for transportation problems onto visitors, without considering their own contribution to problems of traffic congestion and parking issues. Albalate and Bel (2010), carried out a study using an international database of European cities to examine whether urban planners respond to the additional demand for public transport by extending service

supply. The results confirmed that tourism appears to exert a positive externality on public transport, since it provides additional funding for these services, but also imposes external costs on resident users because of the congestion caused by the respective supply constraints.

The main tourist needs in terms of transportation services generated at the specific destinations are the following:

- Seamless travel (transferring smoothly from long distance travel mode to city transportation mode)
- Transparency and quality of the public transportation service
- Security
- Pricing and ticketing customised for tourists; availability at arrival point and not at the city centre
- Parking provisions
- Provisions for bicycle users and pedestrians
- Visitor targeted information/infrastructure in the local transportation

### *Identified Key Needs*

Based on the analysis presented in the previous sections, the authors have identified the following key needs that are common across different tourist segments and tourism destinations:

- **N1 – Safety:** Need for protection against transportation or other accidents or any other mishap or harm against a person's health.
- **N2 – Security:** Need for protection against terrorist attacks and any other kind of criminal activity targeted at tourists.
- **N3 – Low/Special prices:** Need for special/ low-cost transportation, and tourism products and services during the stay.
- **N4 - Pleasure and comfort:** Need for feeling comfortable and drawing pleasure from transportation and experiences during the stay.
- **N5 - Rapidity and efficiency:** Need for rapid and efficient transportation and during activities at the destination.
- **N6 - Advance information:** Need for advance information with regards to the transportation for travelling to/from the destination and the transportation at the destination.
- **N7 - Information at destination:** Need for information with regards to the transportation at the destination.
- **N8 – Conviviality:** Need for social relations during travel and stay.
- **N9 – Autonomy:** Need for independence in travelling and stay.
- **N10 – Convenience:** Need for readily available and easily accessible means of transportation and other tourism infrastructure.
- **N11 – Sustainability:** Need for sustainable, environmentally friendly transportation and tourism infrastructure.
- **N12 – Accessibility:** Need for accessible solutions for all travellers both to and from and at destinations.

The above needs are reflected in the proposed Decision Support Tool for *Transport related Applications on Tourism*.

Tables 1 and 2 summarise the needs identified for the different tourist segments and tourism destinations, respectively.

**Table 1-**Needs per Tourist Segment

| Tourist Segment | | to/from destination | at destination |
|---|---|---|---|
| TS1 | high income groups | Autonomy, Rapidity&Efficiency, Pleasure&Comfort, Sustainability, Advance Information, Security | Autonomy, Rapidity&Efficiency, Pleasure&Comfort, Sustainability, Information, Security |
| TS2 | disabled | Accessibility, Convenience, Safety, Security,Advance Information, Pleasure & Comfort | Accessibility, Convenience, Safety, Security, Information |
| TS3 | students, young people | Low/special prices ,Conviviality, Autonomy, Advance Information | Low/special prices, Conviviality, Autonomy, Information |
| TS4 | children under 17 | Safety& Security,Low/special prices, Advance information | Safety& Security,Low/special prices, Information |
| TS5 | families with children | Safety, Security,Convenience, Low/special prices, Advance Information, Accessibility | Safety, Security,Convenience, Low/special prices, Information |
| TS6 | adults, singles, couples | Autonomy, Advance Information, Pleasure & Comfort, Sustainibility | Autonomy, Information, Pleasure & Comfort, Sustainibility, Conviviality |
| TS7 | retired | Safety&Security,Convenience, Comfort, Low/special prices, Advance Information, Accessibility | Safety&Security,Convenience, Comfort, Low/special prices, Information, Accesibility, Conviviality |
| TS8 | incoming (new and old markets) | Convenience, Advance Information, Low/ special prices, Safety, Security | Convenience, Information, Low/special prices, Safety, Security |
| TS9 | business tourists | Autonomy, Rapidity&Efficiency, Pleasure&Comfort, Sustainability, Advance Information, Security, Convenience | Autonomy, Rapidity&Efficiency, Pleasure&Comfort, Sustainability, Information, Security, Convenience |

**Table 2-**Needs per Tourism Destination

| Tourism Destination | | to/from destination | at destination |
|---|---|---|---|
| TD1 | urban tourism | Safety,Security, Rapidity & efficiency, Sustainibility, Advance informantion | Pleasure & Comfort, Information, Conviviality, Autonomy |
| TD2 | mountain-resort based tourism | Low/Special prices, Convenience, Sustainability | Safety, Information, Accessibility |
| TD3 | sun, beach and coastal tourism (warm climate) | Low/ special prices, Convenience, Safety, Security | Pleasure & comfort, Conviviality, Information |
| TD4 | rural and nature tourism (cold climate) | Advance infromation, Sustainibility, Autonomy, Safety | Information, Sustainibility, Safety, Pleasure& Comfort |
| TD5 | roundtrip | Low/special prices, Safety, Security, Advance information, Convenience, Autonomy | Infromation, Pleasure & comfort, Autonomy |
| TD6 | international second home | Low/special prices, Security, Rapidity & efficiency | Security, Pleasure & comfort, Autonomy |
| TD7 | large events | Advance information, Conviviality, Safety, Security | Low/special prices, Information, Rapidity & efficiency |
| TD8 | theme park and peri-urban attractions | Pleasure & comfort, Convenience, Advance information | Safety, Security, Pleasure & comfort, Convenience, Low/Special prices, Conviviality |

## Transportation Solutions and Best Practices

Following the analysis of needs for tourist segments and tourism destinations, transportation solutions were identified for the two distinct cases of the study, as well as related Best Practices (BPs) in terms of transportation measures implemented contributing to the general competitiveness of the tourism sector, both to be used as input to the proposed DST. Transportation Solutions and Best Practices identified relate to both the supply side, as well as the demand one. A summary of the types of transportation solutions assessed is

presented below, together with the methodology, based on which the related BPs were identified.

### *Transport Solutions Classification*

In the first case of travelling to/ from destination, possible solutions were evaluated in terms of (CONCERTOUR Deliverable n4.1, 2009):

- Intermodality solutions - Integration of infrastructure networks and transport services (air/rail, coaches, UPT/ secondary airports, taxis, UPT/ ports, etc)
- Information services (door to door) pre, during and after trip
- Booking and payment systems
- Handling and tracking of passengers and luggage
- Policy driven initiatives

Similarly, for the case of travelling within a particular destination, transportation solutions should be directed towards:

- Reducing congestion, overcrowding and managing seasonal and peak hour traffic
- Improving safety and security, both in transit and at destination
- Enhancing inter-modality, i.e. smooth transfers from one travel mode to another
- Providing “access for all”, including solutions for disabled and retired/elderly tourists

### *Best Practices Selection*

Adding to the above, a thorough review was carried out, for the purpose of selecting available Best Practices (BPs) in terms of transportation measures implemented, having a direct impact on the tourism destination “market”. Therefore, several such best practices were identified, and these were subsequently assessed and categorised according to certain criteria with the objective to create a targeted and structured repository of BPs to be used in the proposed Decision Support Tool. The selection was made according to the following criteria:

Each BP should primarily address the needs identified for each tourist segment and tourism destination, and take into consideration:

- Site characteristics
- Infrastructure characteristics and associated investment plans (short- and long-term)
- Target groups-segments

Also, each BP should possess the following characteristics:

- *Foster accessibility*: Short-, medium-and long-term actions – fostered by economies, municipalities or tourism organizations – that improve accessibility by targeting services, attractions or mechanisms.
- *Be transferable*: The content and processes involved must be reproducible as is or with adaptation.

- *Inspire action and innovation*: Initiatives that highlight the importance of acting "outside the box," for example, by bringing together new players and mobilising these around common issues.
- *Involve all or several layers of government and stakeholders*: Initiatives that encourage collaboration, using resources and expertise from public, private and non-governmental organizations.

The results of the above elicitation process produced a list of 131 BPs currently implemented in European countries. Tables 3 and 4 summarise the BPs distribution according to their relevance to the two cases of a) travelling to/from destination, and b) travelling within the destination (CONCERTOUR Deliverable n5.2, 2009).

**Table 3**-BPs for Travelling to/from Destination

| Transport challenges to the destination | Frequency |
|---|---|
| Air-rail intermodality | 3 |
| Improve the infrastructure to the destination | 3 |
| Improve the other transport means | 4 |
| Increase accessibility at destinations | 12 |
| Other transport intermodality | 2 |
| Other | 2 |
| **Total** | **26** |

**Table 4**-BPs for Travelling within Destination

| Transport challenges within destination | Frequency |
|---|---|
| Improve the public connection to getting around | 20 |
| Information systems | 17 |
| Integrated packages with transport means | 23 |
| Mobility Management for Tourism | 21 |
| Quality of the services | 2 |
| Standardisation of services | 6 |
| Taxi | 2 |
| Other | 2 |
| **Total** | **93** |

A further 12 BPs were identified to be common to the two categories.

# DST OPERATIONAL ASPECTS

A schematic overview of the structure according to which the DST was set up, that is, the three-phase process for creating and completing a decision scenario, is presented in Figure 1. These are: the initial identification of a specific tourism scenario (Phase I); the identification of the associated needs and barriers (Phase II); the selection of measures/best practices alleviating the aforementioned barriers (Phase III), and leading, if successful, to a

decision. The three phases are described in more detail in the following (CONCERTOUR Deliverable n6.1, 2009).

## Phase I

The operation of the DST is based on the concept of scenarios, which must be defined in terms of either types of tourist segments or types of tourism destinations. Different tourist segments have different travel motivations, engage in different tourist activities, or have specific needs, which may differ from those of other segments. Similarly, different tourism destinations/occasions possess some unique characteristics and are more attractive to certain tourist segments than others. Therefore, it is imperative in the beginning to distinguish whether the user's particular scenario of interest is related to a tourist segment or to a tourism destination. Subsequently, the type of tourist segment or tourist destination needs to be defined explicitly by the user. To this end, in Phase I, the user is asked to decide on a specific tourism scenario by selecting initially between the options of tourist segment or tourism destination and then decide on one or more type (s) of associated tourist segments or destinations. This is carried out according to the segmentation identified and presented in the previous section of this paper.

## Phase II

The goal of this phase is to allow the user to define the "problem". This is achieved by first associating a list of needs with regards to the interaction of tourism and transportation to the scenario of choice, and subsequently defining those that constitute barriers to the enhancement of tourism competitiveness for that particular tourist segment or tourism destination. Finally, this phase aims at ranking these by importance, in order to establish preferences amongst the different barriers, since a specific transport characteristic will influence each type of tourist segment/ tourism destination at a different degree.

The DST uses the list of the identified twelve needs and assigns those that apply to each tourist segment or each tourism destination for the two distinct categories that have been examined in this analysis, that is, a) travelling to/ from a destination and b) travelling at a particular destination. This step is executed by the tool automatically, based on the definition of the scenario of the previous phase.

Once the needs have been assigned to the tourist segment or tourism destination, the user is asked to identify whether these constitute barriers for the scenario under study.

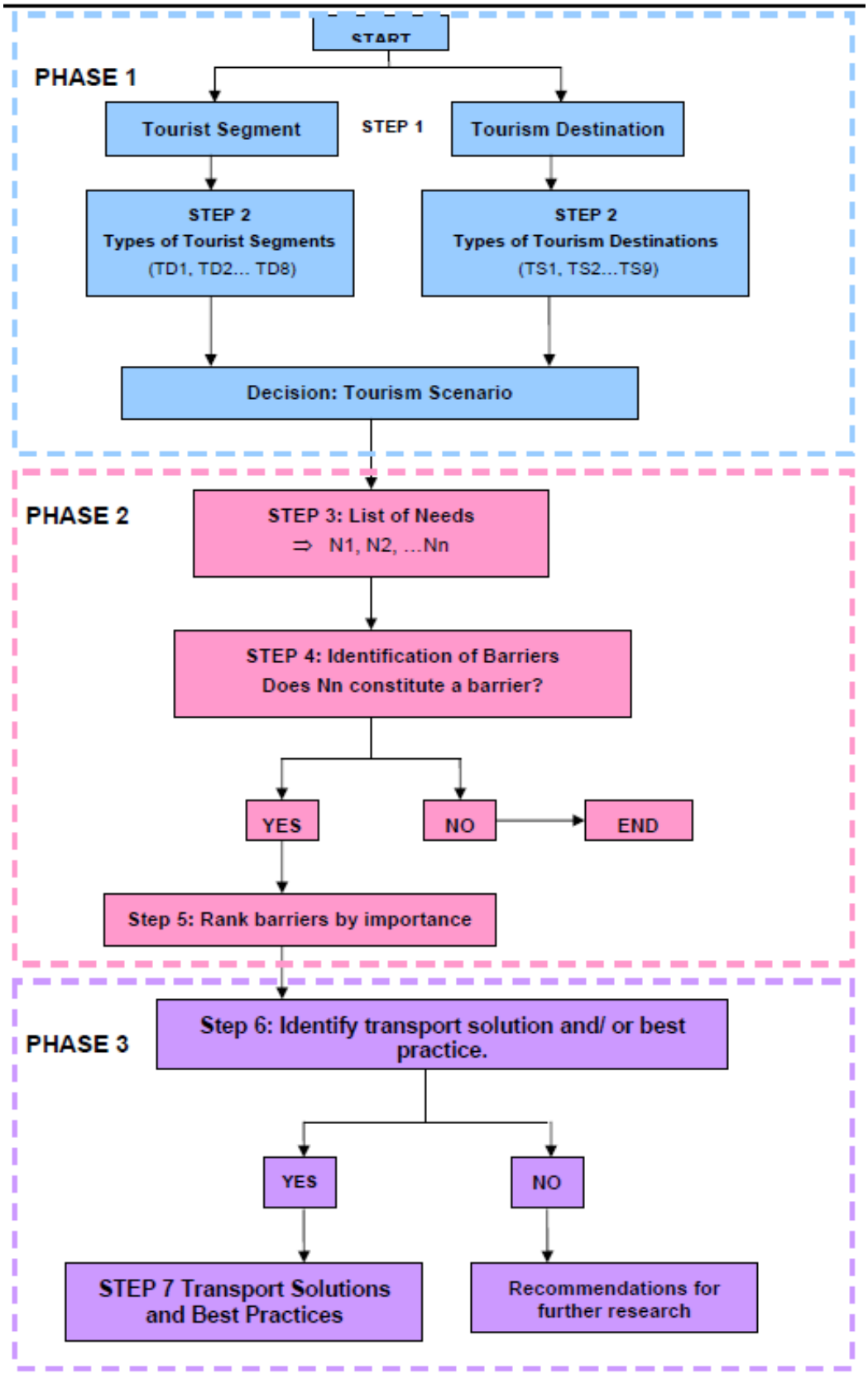


**FIGURE 1-**DST FLOW CHART

Therefore, in this particular step of the process, the user is given the choice of a *YES* or *NO* answer to the question of whether these needs are barriers or not. Finally, the user is asked to rank those needs identified as barriers by importance. The tool provides three options to choose from, i.e *LOW*, *MEDIUM*, and *HIGH* importance.

### Phase III

Phase III is the final phase, which leads to a decision with regards to the Transportation Solutions and available Best Practices to alleviate the barriers identified in the previous phase. The goal of this phase is to provide the user with recommendations on potential "solutions" to the "problem". Therefore, the DST uses the Transportation Solutions and BP database as input information, in order to assign those most applicable to alleviate each barrier identified in the previous phase of the process.

Following the ranking of the barriers, the tool automatically presents a prioritized list of barriers. In the next step, the user is given the option to select a particular barrier, and once this is selected, the user is asked to choose one or both of the following 2 options:

*a) Recommend transport solution(s) to alleviate barrier*

*b) Recommend Best Practice(s) to alleviate barrier*

According to the option selected, the tool generates as final output a list of Transportation Solutions and/ or Best Practices that are applicable to the purpose of alleviating the specified barrier(s).

In the case that there is no Transportation Solution or Best Practice identified for the barrier in hand, the tool indicates this with the phrase: *"No Transport Solution/ Best Practice-Recommendation for Further Research"*.

## DST APPLICATION

This section presents an example case of the DST application, in order to demonstrate the proposed tool's use and overall functionality. The application used herein for demonstration purposes is carried out for a European city for the purpose of the "*disabled"* tourist segment, with potential barriers that have arisen for those disable tourists travelling *within the destination*.

In accordance with the above assumption, the initial selection under "*Category of Interest*" is "*Tourist Segment"*, as depicted in Figure 2. Following the above selection, the type "disabled" is selected from the list of tourist segments (Figure 2). Based on the above, the tool displays the list of needs related to disabled tourists for cases of travelling to/from the specific destination and at a specific destination, and these are *Accessibility, Convenience, Pleasure and Comfort, Advance Information (and Information)*, *Security* and *Safety*, as depicted in Figure 3. Since the case study in hand concerns travelling at the destination, all needs for travelling to/from destination are being considered as satisfied (the answer is "*Yes"* to all needs), in order to eliminate this particular option, whereas the ones relating to the travelling at the destination are considered not satisfied (the answer is "*No"* to all needs).

The next step, therefore, requires the identification of those needs that are considered to constitute barriers, and for this particular case, the barriers were related to

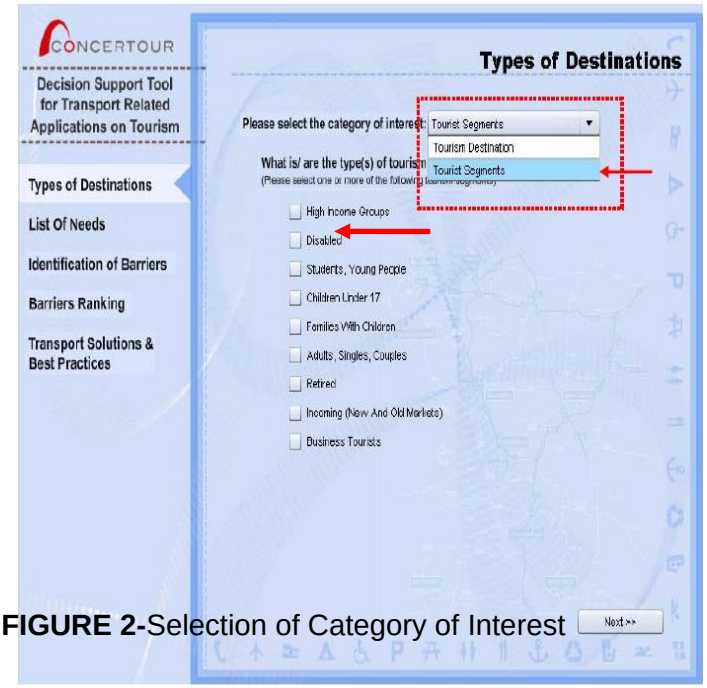


**FIGURE 2-**Selection of Category of Interest

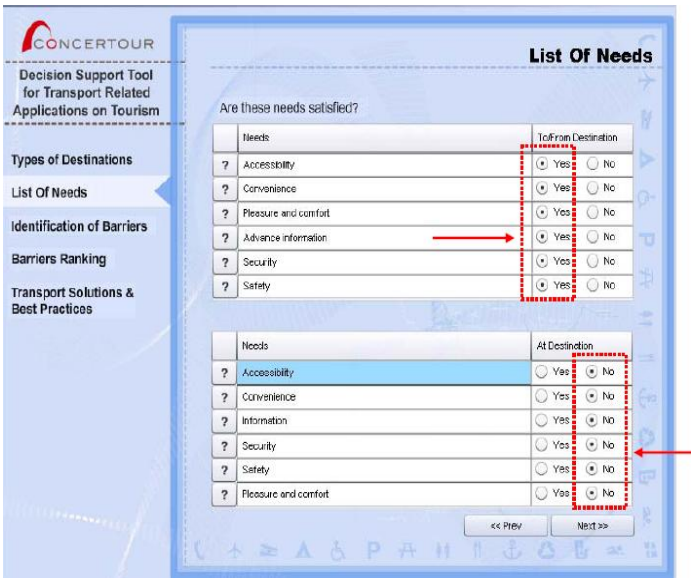


**FIGURE 3-**Selection of Needs

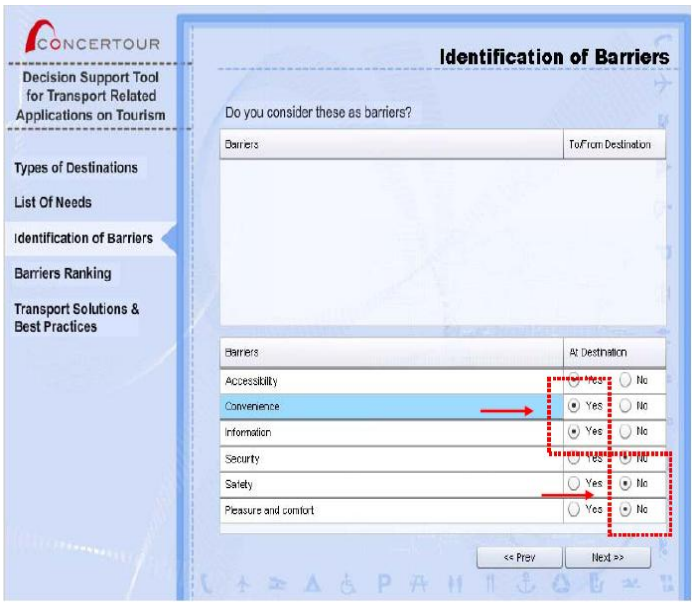


**FIGURE 4-**Identification of Barriers

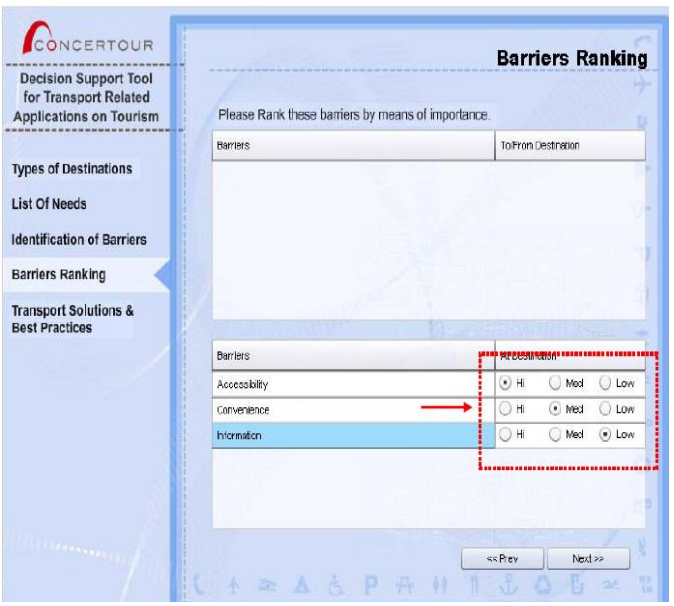


**FIGURE 5-** Barriers Ranking

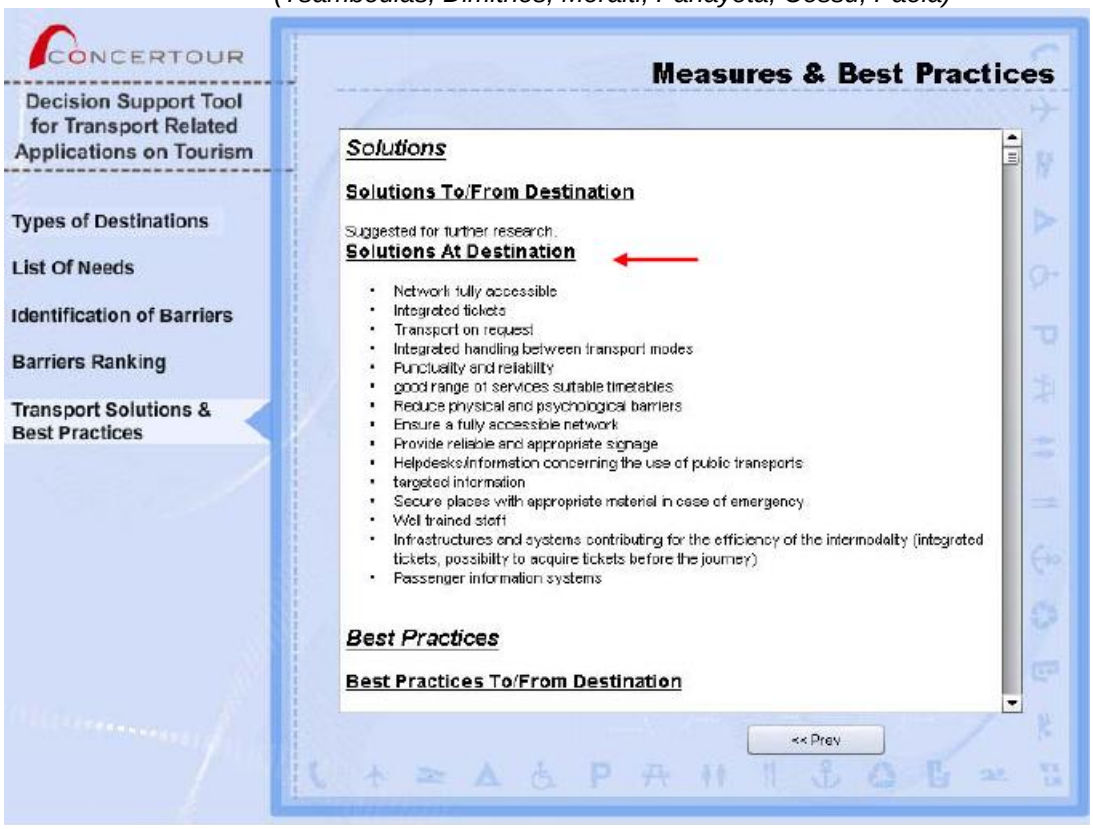


**FIGURE 6-**Transportation Solutions

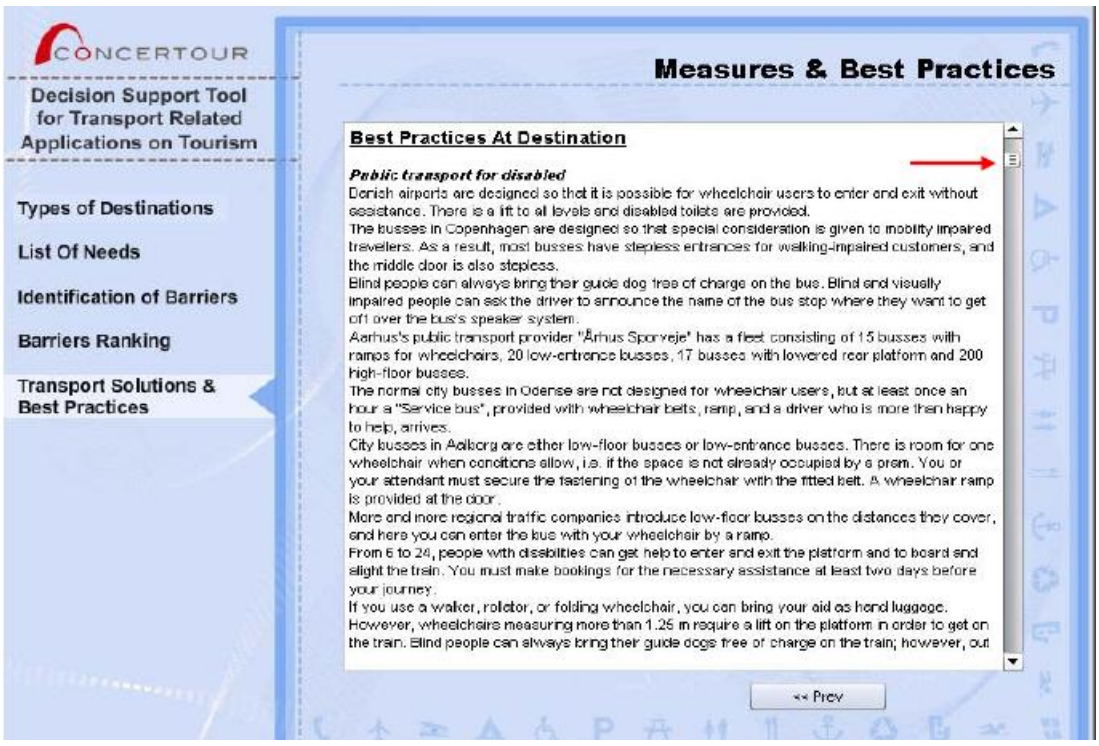


**FIGURE 7-**Best Practices

*Accessibility*, *Convenience* and *Information* as shown in Figure 4 (the answer is "*Yes"* to these specific three needs and "*No"* to the rest).
The most important barrier for the disabled tourist travelling at the particular destination is with regards to accessibility, hence, this is considered of high importance, whilst convenience is evaluated as being of medium importance and information of low importance (Figure 5).
Finally, based on this ranking, the tool produces a prioritized list of transport solutions and best practices, as depicted in Figures 6 and 7. The user can scroll down and get information on all related best practices, including a link that directs the user to the internet homepage of each Best Practice, given that this exists.
Due to the absence of data from field surveys, the data used for the above application was obtained from a group of experts. This was sufficient in order to calibrate the existing DST and demonstrate its capacities. Nevertheless, if data from surveys are used, the outputs might be more representative of the disable tourist segment views for the specific city under study.

# CONCLUSIONS AND RECOMMENDATIONS

Tourism and transportation share an inherent link, since mass tourism is undoubtedly supported by transportation infrastructure and services. Despite the latter, the two sectors are considered individually in most cases in the literature, and although, various destination choice demand theories have been elaborated, they suffer from a number of drawbacks, as they ignore or take little consideration of the impact of transportation.
The absence of such an integrated framework has motivated the present analysis, with the scope to identify key tourism needs in terms of transportation infrastructure and services, for two distinct cases; the first being travelling to/ from a destination, whilst the second, travelling within a destination. In addition, for those particular needs, a number of transportation solutions and available Best Practices were identified with the scope to alleviate transport-related barriers to tourism competitiveness.
Finally, this paper presented a Decision Support Tool for *Transport related Applications on Tourism*, which was developed as a practical software tool targeted at Tourism and Transportation stakeholders to provide guidance and support in the decision-making process through the integration of the respective two sectors.
The added value of the tool is that it provides a medium for bringing together the sectors of tourism and transport, by relating transportation needs to different scenarios of tourist segments and tourism destinations, and also by being a repository of value-added Transportation Solutions and Best Practices, thus making this database available to a wider audience via a simple and user friendly functional environment.
Essentially, the scope of the DST is to advise the decision maker on the type of actions that should be taken or the measures that could be implemented, related to the transportation sector, in order to achieve higher attractiveness for tourism demand for a specific location. Therefore, it can act as a useful tool for tourism policymakers and managers to assess the transportation supply of their respective tourist destinations. It is also a tool for the development of a range of transportation strategies and measures to influence the

destination choice of tourists. Finally, the tool offers the choice of ranking the barriers, according to the specifics of each particular destination and tourism scenario under study, which makes it more adaptable to the specifics of each scenario examined by each individual user.

A key element in the development and use of such policy tools is simplicity and ability to be used by the non-computer specialists and novice users with moderate computer literacy. To this end, the operation of the tool was based on predefined simple and direct questions that a non-expert user may safely ask in order to meet his/her needs, which are in turn transformed into a series of calls to the input databases (tourist segments, tourism destinations, needs, transport solutions, Best Practices) in order to produce tailor-made outputs. The developed application is organized around a main window, with all the functionalities accessible in this window, in a way easily understandable by users, also offering a direct online display of the outputs.

Nevertheless, as with any system, the proposed Decision Support Tool for *Transport related Applications on Tourism* has certain limitations and operational constraints, within which it could operate. These are mainly related to data availability, as well as the ability of the tool to produce comparative outputs. The existing DST has been calibrated through its application on a real case study by a group of experts. However, it is proposed that the application is carried out using data obtained from surveys, such as questionnaire related surveys, tailor made to the requirements of the proposed tool and addressed to both tourists, as well as tourism and transport operators. As the DST is being used and validated and stakeholder input is received, potential enhancements will be considered for inclusion to its future versions.

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