

“Tourism, culture and e-services: evaluation of e-services packages”

AUTHORS	Frank Bruinsma Karima Kourtit Peter Nijkamp
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Frank Bruinsma (Netherlands), Karima Kourtit (Netherlands), Peter Nijkamp (Netherlands)

Tourism, culture and e-services: evaluation of e-services packages

Abstract

Although cultural heritage has attracted much policy and research interest in recent years, it is still unclear to what extent it has a significant economic impact. In most countries the cultural tourist sector definitely represents a productive branch, which in our open world is growing in importance. Cultural capital is frequently used as a strategic development tool for urban tourist policy, often supported by e-services as a central instrument in a competitive tourist sector. The appropriate choice of packages of e-services depends on the various strategic considerations of urban stakeholders (agents), and may differ for each individual city. In this vein, the present paper offers a systematic analysis framework for supporting these choices, and employs multi-criteria analysis as a systematic evaluation methodology, in particular the regime method. Our study also provides the results of an application of the framework in actual case study research for the cities of Amsterdam, Genoa, and Leipzig, which may function as examples for other cities which can learn from good practice. The framework employed is relevant to any city that wishes to evaluate its strategy on the use of e-services in promoting its cultural heritage. Our analysis concludes that tailor-made packages of e-services that serve the needs of the stakeholders in the urban tourist sector can be compared with the help of our evaluation tools.

Keywords: cultural economics, economic development, tourism development, cultural heritage tourism development.

Introduction

The importance of tourism to economies is now widely acknowledged. Tourism has emerged as the world's largest key industry and one of its fastest and most dynamic challenging and growing economic sectors of the 21st century – producing economic flows, driving vast flows of people, commodities, improvement in transport systems and infrastructure, new information technology and logistics and capital, both within Europe and worldwide. It is a vital dimension to countries' overall progress and an important source for sustainable development for many cities and regions (Holden, 2000; Girard et al., 2008), even while other economic sectors and industries are losing ground.

Tourism has many specialized market niches that have emerged over the years, e.g., cultural heritage, art, music, culinary, places of historical interest, attractive museums, which are clusters of similar recreational opportunities within regions and cities that have something that can appeal to certain segments of the population. Cultural heritage is seen as a city promotion aspect. Cultural heritage, both its tangible (e.g., museums, local attractions) and intangible (e.g., culture, ambience) aspects in the city, is one of the most important positive socio-cultural tourist attractions (Girard et al., 2008). It produces growing and leading global tourism niches, which generate a worldwide increase of a very specific group of tourists (Scavarda et al., 2001) who are more interested in environmental, historical, cultural and social aspects.

Many cities and regions now host a wealth of cultural attractions and have to compete for the favors of visitors, both domestic and international (Bruinsma et al., 2009). Cities have to use their indigenous resources, e.g. arts, music, culture, heritage, for identifying and transforming 'places' that affect the tourist's experience, and the location quality of cities is what attracts tourists. And, therefore, such cultural activities form part of the positioning and marketing strategies of cities and regions, especially in the context of the sustainable development. In this way they can remain and become more economically viable and realize their sustainable competitive advantages associated with being customer-oriented, i.e. to know and understand the customers and their needs as well as the products and services that fit them, and, hence, to market themselves.

Tourism, as an information-intensive industry, is positioned as the anchor point attraction for a wider tourism experience, as well as for the establishment of new and innovative marketing and strategic priorities for urban development, in which information and communication technologies (ICTs) may play an increasingly significant role.

Tourism is not just a business; it is an effective tool (one of the external forces) that influences the urban structure of cities and regions, and options for local and regional economic development. Today's dynamic tourist sector has not only changed dramatically the way of pursuing business (Spence, 2004) in a dynamic and challenging business environment. There is also competition among cities to attract (cultural) tourists from all over the world, particularly those with a thirst for adventure, culture and discovery. This competitive situation is present among the many stakeholders involved, such as tourist regions, tour operators, airline carriers,

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hotels, and cultural or eco-facilities (see Theobald, 2004). The aim of this paper is to present a systematic toolkit to evaluate the impact of the implementation of integrated packages of cultural heritage e-services in various cities in Europe to promote a city as a tourist destination – from a long-term strategic policy perspective.

1. Tourism and e-services

1.1. City positioning strategy and marketing.

Cities are challenged to create a ‘City’ that constantly delivers better and innovative local quality products and services. Cities also depend heavily on their performance in generating and utilizing new knowledge, imagination, creativity, innovations and technologies (Forte et al., 2006). Creative and innovative actions, e.g., being open and communicative, are considered to be a precondition for a flexible response in the increased global and challenging business and tourism world, able to meet the need for immediate adaptation to market changes. Such initiatives are equally important for achieving sustainable economic growth, as well as for securing future competitive advantage and social development for cities.

The growing importance of these initiatives puts much emphasis on a new form of entrepreneurship (information and knowledge-based activities) in the cities, and has further intensified and supported the need for appropriate policies and efficient and effective management techniques which encourage businesses to remain competitive in today’s technology-driven information age.

All this uncertainty, whether in terms of competition, technology advancements or business culture (Sureshchandar and Leisten, 2005), requires the design of a valid and tailor-made model for cities that offers the means to improve their creative and innovative performance and to support (control and manage) them better in the challenging business environment in order to stay ahead of the fierce competition, in which the combined pressures of economic liberalization, increased globalization, technological change, and shifts in regulatory systems and consumer needs for products and services lead to a complex local-global action space (the ‘New Economy’) (see Matias et al., 2008; Kaplan, 2009). Therefore, efficient and effective management techniques, specific destination marketing or branding and supporting vehicles and (technological) tools are to be used for identifying and promoting a city’s key attributes (Unique Selling Points – USPs – e.g., best quality, best service, lowest price) for tourists in order to transform places and the implement ‘new economic and culture improvements’.

Cities want to offer a place/destination where the ‘visitor’, in his or her role as worker, traveller or private person, is welcome. This takes place through the systematic definition of a city’s innovative positioning and marketing strategy and its related objectives. This will make it possible to take corrective action to keep the city on track in a very competitive market for destinations, and to achieve a unique position compared with other city competitors (UNWTO, 2006), strongly supported by modern ICT tools (Giaoutzi and Nijkamp, 2006). These tools provide the so called ‘e-services’ to promote the cultural heritage of the city – which is becoming a critical factor for city marketing – and to enhance the attractiveness of cultural capital and specific tourist sites and activities (Chacko, 1997).

Current technologies in innovative tourism marketing, such as Web-based Geographic Information Systems (GIS) applications (e-tourism), can support territorial marketing planning (see Grandi, 2005). These applications can help the city’s stakeholders (urban decision makers, city marketers, but also private companies, and, for instance, representatives of civic organizations) to promote the city’s tourist sites and activities (again see Grandi, 2005). These applications also provide various visitors and users worldwide with an innovative and quick way to access various location-based information on online (virtual) maps, which facilitate identifying and exploring the best and favorable locations with reference to historical and cultural elements and value or logistic advantages. Moreover, this information can be linked to a variety of resources such as web pages, pictures, audio and video files in order to enhance the tourists’ experience in a competitive world.

The marketing of tourism facilities and cultural amenities (e.g., clean beaches, places and districts of historical interest, attractive museums, cultural heritage, lakes, mountains) is of great importance in a competitive global economy, and, thus, one of the critical success factors (Giaoutzi and Nijkamp, 2006; Bruinsma et al., 2009). This means that cultural heritage and cultural amenities are not only sources of historical information or places’ identities, which affect the image of the attraction itself. They also influence the broader image of the city as a destination. Consequently, information provided to (potential) visitors has an impact on this image, and, hence, on the choice behavior of visitors. This is a major challenge to policy-making bodies, especially in the context of sustainable local development. Our study will address, in particular, planning issues related to cultural heritage in cities, against the background of the opportunities offered by the modern ICT sector.

1.2. Cultural tourism and e-services. During the last decade, ICT has significantly revolutionized the travel and hospitality industries. As a result, the global tourism industry is changing very rapidly in terms of its structure and operations (Werthner and Klein, 2000; Minghetti, 2003; Buhalis, 2003; Piccoli et al., 2003), and e-services have been developed in a variety of ways to support tourism in different cities, countries, and continents. They are experiencing strong growth that serves the needs of various stakeholders, such as urban planning policy departments and tourist boards of the municipality, city marketers, private companies, and, for instance, representatives of civic organizations. The continuing rise of e-services as a communications tool for travel and tourism presents challenges for a city's destination marketing and tourism enterprises. E-services form very efficient and cost-effective instruments to promote (new) destinations and hidden city treasures.

The supply of e-services in the modern ICT world may be regarded as a strategic vehicle to enhance the public's familiarity with urban cultural heritage through innovative marketing channels, and to increase user satisfaction through advanced choice-aid facilities. The range of services can extend from product and services information, inventory levels and locations, price, and quality to order forms, online transactions, help and feedback. The present paper analyzes these services in particular.

Our paper focuses on tourism that is (mainly) related to, or attracted by, the presence of cultural heritage in a tourist destination that is simultaneously competing and cooperating, within the destination and event network context, in the framework of sustainable local socio-economic development. Culture has become a crucial resource in the post-industrial economy, as reflected in the use of cultural heritage in the development strategies of the European Union and other bodies. Culture is increasingly used by cities and regions as a means of preserving their cultural identity and developing their 'socio-economic vibrancy' (Ray, 1998). Several European cities, e.g., Amsterdam, Barcelona, Prague, Genoa, Leipzig, Munich, Stockholm, Vienna, have enhanced their ICT capabilities and implemented more effective and innovative e-services. They have moderated and developed a wide range of innovative e-services and provide a broad package of facilities and cultural amenities within a destination and event-marketing platform in order to make cultural heritage more accessible, so that they can attract the maximum number of potential visitors from different places of origin.

However, the pace of the ongoing trends towards functionally richer e-services shows quite some

difference, and there is a great deal of uncertainty concerning the potential advantages, failure factors, obstacles and barriers of integrated e-services for various groups of stakeholders in tourist places, with particular reference to the enhancement of advanced access to cultural heritage in cities. Thus, there is a need for a systematic analysis of the pros and cons of investment in e-services in the urban tourist sector in Europe.

Our paper develops a framework for a systematic analysis of different packages of tourist e-services in the context of the urban cultural heritage. This framework is based on different ambitions for, and designs of, appropriate e-services for cultural tourism. These are then integrated in a set of distinct policy scenarios, which map out the score for planning different packages (or clusters) of relevant e-services. These scenarios are evaluated in an integrated decision-support context using multi-criteria analysis, in particular the Regime method, which is suitable for evaluating distinct alternatives on the basis of a set of different evaluation criteria. The main advantage of the method is that it can cope with binary, ordinal, categorical and cardinal (ratio and interval scale) data. Regime analysis is also able to use mixed data sets. Regime analysis uses two kinds of input data: an impact matrix (structured information table) and a set of weights (see Hinloopen et al., 1984; Nijkamp et al., 1990). The impact matrix consists of elements that measure the scores of the scenarios on the relevant criteria (e.g., criteria scores). The weights reflect the relative importance of each criterion according to the relevant stakeholder or decision-maker. The main advantage of the Regime method is that it is able to judge qualitative and quantitative evaluation criteria, while it is able to generate an unambiguous ranking of choice possibilities or alternatives.

We will pay attention here to the question: How can scenario analysis – in combination with MCDA Regime analysis – be used to promote a strategic policy basis for the development of e-services in the tourist sector, with particular reference to cultural heritage?

The empirical importance of this approach is illustrated by means of three case studies in Europe based on the following selected cities, which have an interest in e-services, viz. Amsterdam, Genoa, and Leipzig. These cities are ISAAC city partners involved in the research project and activities. They provided focus groups for the research project in order to cooperate and share their inside knowledge by means of interviews with city representatives and

cultural attractions' stakeholders, observations of city museums, and an evaluation of a selected sample of their presently available e-services and websites.

The focus groups give a clear overview of their present situation in relation to the need for (novel) e-services in the cultural (heritage) tourism sector to facilitate the better enjoyment and the promotion of the cultural attractions in the selected city as perceived by the three targeted categories of tourists, residents, and service providers. The three above-mentioned cities want to enhance their international tourist profile, not only by improving their image as cultural tourist attractions, but also by popularizing the cultural heritage of the city and providing more accessible information through the use of e-services regarding that heritage.

Clearly, any such strategic policy presupposes the involvement of all relevant stakeholders (e.g., residents, the business sector, city marketers) in the tourist and cultural heritage sector. Our investigation will show that a systematic definition and mapping of the rich variety of perceptual and attitudinal elements that characterize the (current and future) profile of a city for visitors through the provision and use of e-services is both feasible and desirable.

2. Strength-weakness analysis of e-services: a review

In this section we provide a brief review of the literature in which the impacts of e-services is assessed. This review results in a construction of a list of impacts, which may be operationalized in evaluation criteria and then used for the evaluation

of e-services in the case studies considered. The main sources to identify the strengths and weaknesses of e-services were the academic and management literature that describes the experience in practice of various stakeholder cities (e.g., tourist cities and regions, tour operators, airline carriers, hotels and cultural or eco-facilities (see Theobald, 2004)) with ICT tools (e.g., virtual tours, multilingual interactive maps, online booking facilities, mobile devices etc.). All in all, 9 quantitative and 17 qualitative strengths and 7 qualitative weaknesses (referring to control and strategy reasons for use) were identified. Table 1 summarizes the strengths and weaknesses of the respective e-services and lists the literature sources, in which these were found.

The entries in this table form a first indication of impacts, which may result from the implementation of e-services in tourist cities. Turning these impacts into measurable indicators will allow us to use these in the actual judgment of the e-services developed by means of multi-criteria analysis. The construction of a set of suitable assessment indicators is presented in Section 3 for the cities of Amsterdam, Genoa, and Leipzig, which were selected for an in-depth investigation.

All in all, there appears to be a great variety of determinants that influence the motives to introduce e-services in tourism enterprises and cities in order to enhance the public familiarity with urban cultural heritage through marketing channels and to increase the user satisfaction through advanced choice-aid facilities.

Table 1. Foreseeable consequences of e-services, e-tourism and e-heritage

Quantitative advantages	Literature sources
1. Increased revenues for service providers	Buhalis, D, and Deimezi, O., 2004; UNCTAD, 2005; Riganti, 2007; Buhalis and Law, 2008
2. Increased tourist spending	Bakos, 1998; Werthner and Klein 1999; Scavarda et al., 2001; Wirtz, 2001; Pan and Fesenmaier, 2006; Massey et al, 2007
3. Cost reductions for consumers	Bakos, 1997, 1998; Connolly et al., 1998; Vogt and Fesenmaier, 1998; Porter, 1990; Hedstrom et al., 2003; Oorni and Klein, 2003; Buhalis and Deimezi, 2004; Rabinovich and Bailey, 2004; UNCTAD, 2005; Raventos, 2006; Buhalis, 2007; Stockdale, 2007; Watabe and Iwasaki, 2007
4. Increased purchases and retention of customers	Tedeschi, 1998; Morrison et al., 1999; Gefen, 2000; Rabinovich and Bailey, 2004; Watabe and Iwasaki, 2007; Buhalis and Law, 2008
5. Price and cost reductions of (air) transportation for customers	Choi, 1997; Bakos, 1998; Starr, 2000; Scavarda et al., 2001; Wirtz, 2001
6. Enhancement of the long-term profitability	Berger et al., 2007
9. Increased market share	Marcussen, 2003; Buhalis and Deimezi, 2004; UNCTAD, 2005; Berger et al., 2007
Qualitative advantages	Literature sources
1. Attract and foster new markets, businesses and services	Kirzner, 1973, 1979; Buhalis, 1998; Marcussen, 2000; Hitt et al., 2001; Porter, 2001; Scavarda et al., 2001; Brynjolfsson and Kahin, 2002; Klein, 2002; Buhalis, 2003; Hedstrom et al., 2003; Matlay, 2003a,b; Matlay and Addis, 2003a; Buhalis and Deimezi, 2004; Matlay and Westhead, 2005; UNCTAD, 2005; Riganti,2007; Stockdale, 2007; Buhalis and Law, 2008
2. Rise in useful competition in the tourism industry	Castells and Hall, 1994; Glaeser, 1998; Scavarda et al., 2001; Graham, 2002; Cohen-Blankshstein and Nijkamp, 2003; Hedstrom et al., 2003; Buhalis, D., and Deimezi, O., 2004; UNCTAD, 2005; Raventos, 2006; Riganti, 2007; Stockdale, 2007; Buhalis and Law, 2008

Table 1 (cont.). Foreseeable consequences of e-services, e-tourism and e-heritage

Quantitative advantages	Literature sources
3. Increased local and regional job employment	U.S. Census Bureau, 2006; Riganti, 2007
4. Enhanced access to cultural heritage for customers	Bonn et al., 1998; Gulati and Garino, 2000; The Economist, 2000; Scavarda et al., 2001; Boyer et al., 2002; Hedstrom et al., 2003; Mills and Law, 2004; Luo et al., 2004; UNCTAD, 2005; Pan and Fesenmaier, 2006; Berger et al., 2007; Riganti, 2007; Simão Dias, 2007; Buhalis and Law, 2008
5. Time-savings for customers (more efficient and accurate customer services)	Roehl and Fesenmaier, 1992; Vogt and Fesenmaier, 1998; O'Connor, 1999; Siebel and Hous, 1999; Werthner and Klein 1999; Barnes and Hunt, 2001; Main, 2001; O'Connor and Frew, 2001; Scavarda et al., 2001; Chen and Hitt, 2002; Green, 2002b; Plepsys, 2002; Pechlaner et al., 2002; Singh, 2002; Matlay, 2003a,b; Buhalis and Deimezi, 2004; Bai et al., 2004; Rabinovich and Bailey, 2004; Bieger et al., 2005; Matlay and Westhead, 2005; UNCTAD, 2005; Pan and Fesenmaier, 2006; Raventos, 2006; Stockdale, 2007; Buhalis and Law, 2008; Newhagen and Rafaeli 1996; Berger et al. 2007; Riganti, 2007; Watabe and Iwasaki, 2007; Buhalis and Law, 2008
6. Increase in the supply of customized tourism services	Newhagen and Rafaeli, 1996; Werthner and Klein, 1999; UCLA, 2000; Lake, 2001; Scavarda et al., 2001; Travel Industry Association, 2001; International Trade Administration, 2002; Pan and Fesenmaier, 2006; Raventos, 2006; Stockdale, 2007; Riganti, 2007
7. Increased transparency due to the comparability of products and prices	Brynjolfsson and Smith, 2000; Clemons, Hann and Hitt, 2002; UNCTAD, 2005; Buhalis, 2007; Watabe and Iwasaki, 2007; Buhalis and Law, 2008
8. Integration of distribution channels to provide packages of tourism services	Jeng 1999; Werthner and Klein 1999; Morrison et al., 2001; Scavarda et al., 2001; Boucouvalas, 2002; Pan and Fesenmaier 2000,2006; Buhalis, 2003; Buhalis and Deimezi, 2004; Kim et al., 2004; Matlay and Westhead, 2005; UNCTAD, 2005; Pan and Fesenmaier 2000,2006; Stockdale, 2007; Berger, 2007; Buhalis and Law, 2008
9. Increased local/regional economic growth	Gulati et al., 2000; Morrison et al., 2001; Buhalis and Molinaroli, 2003; Buhalis and Deimezi, 2004; UNCTAD, 2005; Pan and Fesenmaier 2000, 2006; Stockdale, 2007
10. Reduction of market entry barriers (no geographic distance)	Peterson et al., 1997; Buhalis, 1998; Starr, 2000; Porter, 2001; Scavarda et al., 2001; Wirtz, 2001; Klein, 2002; Matlay and Addis, 2002; Jeong et al., 2003; Buhalis and Deimezi, 2004; UNCTAD, 2005; Matlay and Westhead, 2005; Stockdale, 2007; Watabe and Iwasaki, 2007; Buhalis and Law, 2008
11. Rise in product innovations	Kirzner, 1973,1979; Scavarda et al., 2001; Brynjolfsson and Kahin, 2002; Matlay, 2003a,b; Matlay and Addis, 2003a; Matlay and Westhead, 2005; UNCTAD, 2005; Riganti,2007
12. Possibility of services provided to better match capacity with demand	Scavarda et al., 2001; Buhalis and Deimezi, 2004; UNCTAD, 2005
13. Strengthened reputation of the businesses	Block and Roering, 1979; Boulding and Kirmani, 1993; Fodness and Murray, 1997; Buhalis, 1998; Ruyter et al., 2001; Klein, 2002; Buhalis and Deimezi, 2004; UNCTAD, 2005; Buhalis and Law, 2008
14. Increased access and awareness of other cultures by reducing social distances	Hedstrom et al., 2003; Berger et al., 2007; Riganti, 2007; Stockdale, 2007
15. Improvement in the decision-making process for customers	UNCTAD, 2005; Raventos, 2006; Berger et al., 2007; Riganti, 2007 Simão Dias, 2007
16. More detailed and higher quality of information	Bakos, 1997, 1998; O'Connor, 1999; Vogt and Fesenmaier, 1998; Porter, 1990; Werthner and Klein 1999; Scavarda et al., 2001; Wirtz, 2001; Hedstrom et al., 2003; Oomi and Klein, 2003; Buhalis and Deimezi, 2004; Rabinovich and Bailey, 2004; UNCTAD, 2005; Pan and Fesenmaier, 2006; Raventos, 2006; Buhalis, 2007; Massey et al, 2007; Simão Dias, 2007; Stockdale, 2007; Watabe and Iwasaki, 2007; Buhalis and Law, 2008
17. Higher process efficiency	Buhalis, 1998; Scavarda et al., 2001; Paraskevas and Buhalis, 2002; UNCTAD, 2005; Pan and Fesenmaier 2006; Stockdale, 2007; Buhalis and Law, 2008
Qualitative disadvantages	Literature sources
1. Increased number of bankruptcies of local firms due to the market entry of larger (international) firms	Chaston, 2001; Matlay and Westhead, 2005
2. Decrease in local employment	Scavarda et al., 2001
3. Increased competition in vulnerable local markets	Radosevich 1997; Jeng 1999; Stoltz 1999; Werthner and Klein 1999; Scavarda et al., 2001; Buhalis and Deimezi, 2004; UNCTAD, 2005; Pan and Fesenmaier, 2006; Stockdale, 2007
4. Intensification of price competition leading to low levels of customer loyalty	Stockdale, 2007
5. Decrease in socially-rich interactions between buyers and suppliers	Riganti, 2007
6. Increased stress on destinations (overcrowding, nuisance, resource depletion, etc.)	Scavarda et al., 2001; Riganti, 2007
7. Destruction of local cultures/customs	Scavarda et al., 2001
8. Exclusion of persons not having access to the Internet or the skills to use ICT	Braliev and Yatromalakis, 2002; Stat Bank, 2002; Buhalis and Deimezi, 2004; Wolfe et al., 2004; Buhalis and Law, 2008

Source: Based on literature review (see Bruinsma et al., 2009).

In general, e-services (e.g., virtual tours, multilingual interactive maps, online booking facilities, mobile devices, journey planners, e-forum/e-participation, etc.) appear to be powerful and competitive tools in regional tourist policy (see Goeldner and Ritchie, 2006) and in an open economy. E-services enhance competitiveness in the tourist industry sector, where intense competition among cities and business heightens the need for strong brand identity and for developing new marketing and strategic priorities for creative and innovative urban development and attracting potential (cultural) visitors from all over the world.

E-services give an opportunity to access international tourism markets on an equal footing, marketing the attractiveness of a certain (cultural) destination, its USPs (viz. tourism policies and strategies) in order to enhance their value chain so as to generate growth in tourist visits and expenditures. With the full economic impact of e-services, it is increasingly obvious that a shift in entrepreneurial equilibrium (balance between supply and demand forces) is taking place.

Our literature findings suggest that because of the successful implementation of various online ordering systems in the various areas of tourism, such as transportation services, accommodation and packages containing various tourism services (e.g., Expedia Inc., Travelocity, Airlines, etc.), services via the Internet have increased steadily in terms of, for example, increased revenue, sales, tourists' spending; purchases and retention of customers, reduced prices, cost reductions (of (air) transportation), enhanced access to cultural heritage for customers, etc. in a relatively short period of time. For example, already more than one-half of all airline reservations are made through the Internet (Massey et al., 2007).

The dynamic growth of the use of e-services has resulted in dramatic changes in the structure and operations of the travel tourism industries in particular (changing the global tourism industry rapidly). Changes are particularly obvious in the way that e-services are supporting the interactivity between destinations and tourism enterprises and consumers or tourists and assessing the economic value of resources, such as cultural heritage or the cultural and natural environment. And, as a result, they are re-engineering the entire process of developing, managing and marketing tourism products and destinations.

The structure of an entire industry is changing and this process creates new (business) opportunities by taking advantage of actual or perceived economic disequilibria (such as changes in technology). For example, cities can offer in their web sites (available

in different languages) tourist information with an indication of recommended tourism facilities and cultural amenities (e.g., clean beaches, places and districts of historical interest, attractive museums, cultural heritage, lakes, mountains, attractive hotels, thematic tour packages, transport facilities, a booking system). Tourists are, thus, becoming more aware of new tourist destinations and new styles (e.g., culture, history, art, music).

Since online services are continuously accessible, time and geographic differences no longer hinder the interaction between tourism service providers and their customers. The customer can easily compare different prices and gain knowledge about products and destinations, and, thus, the price becomes the most important decision criterion. This means that people also have access to other cultures and points of view and they adopt new consumption patterns, seek new life experiences, and become more open to changes in habits and values (diversity is enriching). Thus, online services can develop interdisciplinary knowledge to facilitate the flow of tourists and deliver the tourist to the 'product' in an efficient and cost-effective way. This has improved the tourism process, by making it more efficient and effective financially.

The reorganization of the tourism market together with the effective use of ICTs allows cities to build their own brand images, develop new products, promote their tourism resources and expand their customer base to ultimately increase tourism foreign earnings and contribute to local development. It offers cities an online body to market this diversity, culture and heritage, as well as to facilitate the marketing and provision of associated tourism products.

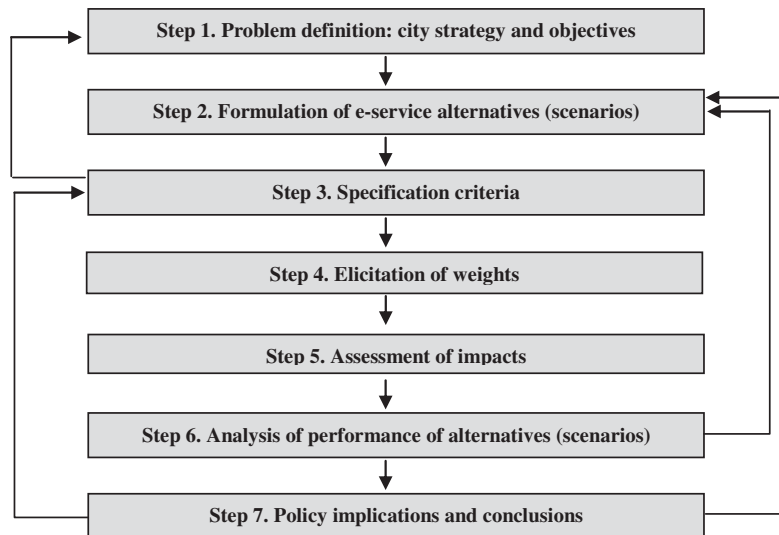
3. Research methodology

This section consists of two key components: (1) the development of a conceptual evaluation framework; and (2) the application of this framework in actual case-study cities – Amsterdam, Genoa, and Leipzig, which all have an interest in e-services. The conceptual evaluation framework consists of 7 consecutive steps to evaluate a cities' strategy for the use of e-services to promote its cultural heritage, starting with the problem definition and ending with conclusions and policy recommendations.

In our application of the framework to the case study cities, Amsterdam, Genoa, and Leipzig, we have developed policy scenarios and have next applied the MCDA Regime analysis to evaluate the impact of those policy scenarios. If the effects are quantitative and/or qualitative, but not valued in monetary terms, and if no standards (or critical levels) are used in the evaluation process, then the

application of Regime analysis is recommended. Regime analysis is a discrete method, which is suitable for evaluating multiple alternatives. The main advantage of the method is that it can cope with binary, ordinal, categorical, and cardinal (ratio and interval scale) data (Hinloopen et al., 1984).

We will now first systematically outline the various steps in our evaluation of packages of e-services in the cultural tourism sector in the case study cities (see Figure 1). This can be seen as a toolkit for strategy development for other cities, which aim to enhance their tourism profile.



Source: Bruinsma et al. (2009).

Fig. 1. Stepwise presentation of evaluation analysis for e-services in urban cultural tourism

Step 1: Problem definition: city strategy and objectives. In the first step, we describe the position of e-services in supporting the strategy and objectives of the respective cities to promote the city by publicizing its cultural heritage. A short survey questionnaire was used to verify and adjust strategies and objectives for each respective city (viz. to assess the city’s goal profile in the cultural tourism market). Finally, we asked the representatives of these cities about the type of stakeholders (e.g., municipality, city marketers, private companies, and, for instance, representatives of civic organizations) involved in the design and implementation of e-services, and which e-services they had already implemented and which e-services they intended to implement. The results of this first step form the reference situation for developing urban policy scenarios in *Step 2* (based on two dimensions) and provide valuable information for the specification of evaluation criteria in *Step 3*.

Step 2: Formulation of e-service alternatives: the development of future policy scenarios. In the second step, alternative e-services are formulated in the form of four future development scenarios for each city, which provide possible solutions to the problem and, thus, need to be evaluated in terms of their contribution in fulfilling the objectives specified in *Step 1*. First of all, a survey must be made of all the e-services presently available in each city. This is done in *Step 1* based on the information gathering, and this is also the reference situation for

the opportunities of future development of e-services to promote cultural heritage.

The scenarios are based on two dimensions: (i) either an active or inactive local authority intervention regarding the design and implementation of e-services; and (ii) either minimal or maximal socio-economic opportunities to design and implement e-services. The first dimension is straightforward: we want to analyze policy scenarios regarding the design and implementation of e-services to promote the cultural heritage of the city. It is obvious that an active or inactive local authority might have a huge impact. Minimal and maximal socio-economic opportunities mean that both the budgets of tourists and the local authority are low or high, respectively. A low tourist budget means less tourists and less tourist spending in the cities. A low government budget means low investment levels in restoring cultural heritage and low funds available for promoting the city by implementing e-services. In the case of maximal socio-economic opportunities, the opposite situation may be expected: large groups of tourists spending a lot in the city and large government budgets both for restoring cultural heritage and for promoting it by e-services.

Taking these extremes, four policy scenarios can be derived:

- ◆ Scenario 1. *The winner takes it all*: active local authority, maximal socio-economic opportunities.

- ◆ Scenario 2. *Rowing upstream*: active local authority, minimal socio-economic opportunities.
- ◆ Scenario 3. *Don't worry, be happy*: inactive local authority, maximal socio-economic opportunities.
- ◆ Scenario 4. *Take it as it comes*: inactive local authority, minimal socio-economic opportunities.

Various stakeholders (e.g., municipality, city marketers, private companies and, for instance, representatives of civic organizations) – involved in the design and implementation of e-services – will score the performance of e-services established in each scenario.

Step 3: Specification of criteria. In the third step, the criteria are defined that are used to assess the performance of the alternative scenarios. The set of criteria used should reflect the objective(s) specified in Step 1. Therefore, we first had to make a long list of criteria covering all fields of importance. In this long list we distinguished three types of criteria: functional requirements, user requirements, and societal impacts of e-services. The cities' representatives (e.g., city marketers, municipality) selected eight prominent criteria out of the long list of 24 criteria, in the light of the problem and context-specific situation in each city.

Table 2. The long list of criteria

Type of criteria	Criterion	Description of the criteria and how to measure them
Functional requirements of e-services	1. Personalization	Does the e-service offer personalized information of users' preferences, desires and needs?
	2. Multilanguage	Is the information provided in multiple languages?
	3. Up-to-date information	Is the information provided frequently updated?
	4. Quality of information	Is the information provided reliable?
	5. Podcasts/downloads	Is the information provided available in downloadable/printing form?
	6. Access to booking facilities	Does the e-service give access to online booking systems of cultural heritage attractions and events?
	7. Virtual maps	Do the e-services include an interactive map to provide guided tours of the city to get an idea about it without leaving the living room?
	8. Profiling	Does the e-service store the user's profile and offer tailored information?
	9. E-participation	Does the service application establish, simplify and improve the interaction (dialog), and enable users to share information, receive updates and hints from other users as well as to be able to engage in cultural and public life of the municipality?
	10. E-governance	Does the application establish, simplify and improve the interaction (dialog) between citizens and local authorities and between tourists (exchanging hints, opinions, and highlights), and share practical information about the city?
User satisfaction criteria e-services	11. Function	Has the e-service all the functions the user needs? Does it provide the user with all basic information? Is it interactive?
	12. Design	Is the design attractive? Is the way the information is organized clear? Is the interface pleasant to use?
	13. Ease of use	Is the e-service easy to use, is the information easy to find, is it easy and quick to recover from mistakes and error messages?
	14. Enjoyment	Is using the e-service enjoyable? Does it contain fun elements?
	15. Learning	Is the content offered by the e-service informative? Are the messages clear and easy to remember? Does it provide for underlying stories and hidden messages?
	16. Content	Does the e-service provide the information the user needs? Is the e-service useful and in the requested language?
	17. Future use	Is the e-service comfortable to use? Would the user use the e-service again and recommend it to others?
	18. Participation	Does the e-service encourage participation (also with residents and other tourists) and is it rich in terms of stakeholder participation?
	19. Accessibility	Is the e-service accessible on multiple platforms/devices? Is it accessible to visually disabled persons and can the content produced by the e-service also be used when offline (downloads, prints)?
Societal impacts of e-services	20. Urban socio-economic climate	Has the e-service impact on the performance of economic sectors such as tourism, hospitality, shopping and secondary sectors such as financial services telecommunication, medical, police and transportation? The impact can be measured by changes (growth) in revenues and customer retention, change (growth) in employment, change (growth) in private investments, new ventures, and changes in the structure of the sector.
	21. Quality of life and sustainability	Has the e-service impact on the safety (crime rate, vandalism, preventive measures taken), quietness (noise, destruction of local customs/residents, visual intrusion), pollution (air pollution, water pollution, littering), and urban green (supply of green spaces, accessibility of urban green, the area of urban green assigned as cultural/natural heritage)?
	22. Cultural profile	Has the e-services impact on cultural facilities, exhibitions, events, manifestations, and conventions? The impact can be measured by the change in visitors, the change in the capacity to host such activities and the change in the number of activities. Furthermore, impacts can be measured regarding the attitude of visitors towards cultural heritage. For instance, an increasing social awareness of the access to cultural heritage values, a reduction in social distance between cultures, a strengthening of social cohesion, and a change in visitors behavior (also in time and place) towards cultural heritage.

Table 2 (cont.). The long list of criteria

Type of criteria	Criterion	Description of the criteria and how to measure them
	23. Urban land use	Has the e-service an impact on the building sector (measured by change/growth in revenues, employment investments, new ventures) infrastructure facilities (availability of roads, rail, bicycle roads, pavements, pedestrian areas), the perception of the city scape, and urban water systems (number of waterfronts/canals assigned as cultural/natural heritage)?
	24. Transportation	Has the e-service an impact on network congestion (traffic congestion, queuing of tourists to enter cultural heritage attractions, accessibility to cultural heritage attractions by public transport), noise (car or airport), and transport safety?

Step 4: Elicitation of weights. In the fourth step, the eight criteria, selected in Step 3, were then given appropriate weights by the cities’ decision makers who were involved in the design and implementation of e-services in each partner city. The decision makers are asked to judge pairs of criteria. Based on these pair wise comparisons, weight values were determined.

Step 5: Assessment of impacts. In the fifth step, city marketers scored the criteria for the four

alternative future tourist e-service scenarios, in a structured way in an impact matrix.

Step 6: Analysis of the performance of the alternatives (scenarios). The sixth step, the evaluation process, constitutes the application of a multi-criteria evaluation method. We applied Regime analysis, which combines the information contained in the impact matrix and the set of weights to calculate a performance score for each alternative scenario.

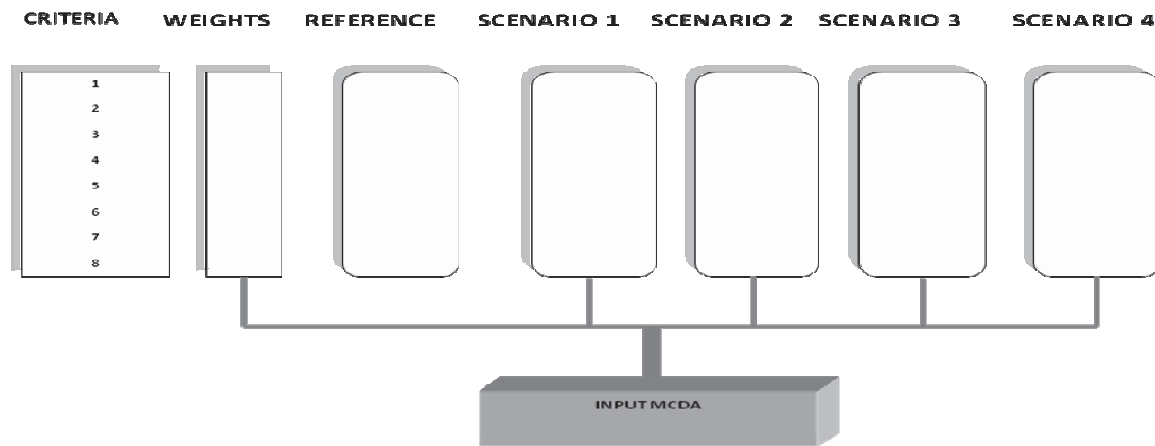


Fig. 2. Input MCDA

Figure 2 shows the information gathered in the previous steps and the input for the multi-criteria analysis. The scores of the criteria in the present situation, the reference situation, are not taken into account in the multi-criteria analysis (MCA). The scenarios were then ranked according to their preference, given the difference in scores of the scenarios for each criterion and the weight of the respective criteria.

Step 7: Policy implications and conclusions. In the final step of an evaluation process conclusions are drawn, and policy recommendations are made.

The seven successive steps described above will now be carefully applied for the analysis of the selected cities – Amsterdam, Genoa, and Leipzig – in the following sections.

Table 3. General framework: The seven steps

The seven steps	Selected cities		
	Amsterdam	Genoa	Leipzig
Step 1: Problem definition	X	X	X
Step 2: Formulation of e-service alternatives	X	X	X
Step 3: Specification of criteria	X	X	X
Step 4: Elicitation of weights	X	X	X
Step 5: Assessment of impacts	X	X	X
Step 6: Analysis of performance of alternatives	X	X	X
Step 7: Policy implications and conclusions	X	X	X

By doing this, the cities are good showcases for other cities that want to evaluate their city strategy

with respect to the promotion of cultural heritage by the design and implementation of e-services.

4. Case descriptions: Amsterdam, Genoa, and Leipzig

In this section, we will present some general remarks regarding the present situation concerning the respective cities' (Amsterdam, Genoa, and Leipzig) strategies and objectives to promote themselves by their cultural heritage, the type of stakeholders involved in the process of design, and the implementation of e-services, and the present availability of e-services in the cities (Step 1).

4.1. Cities destination strategy and objectives (Step 1). In terms of city-destination positioning strategy (often expressed through branding), Amsterdam, Genoa, and Leipzig want to position themselves in the (inter)national tourist market not only by changing or enhancing their (entire) image of their destination (into the old city and the surroundings of the city), but also by popularizing the cultural heritage of the city and making (the less well-known) cultural heritage more accessible. This can be achieved by: (i) promoting new aspects of the city's cultural heritage: i.e. Amsterdam wants to shed its image as a drug-tolerant city and put more focus on the city as a cultural city, a city of events, an architectural city, or, Leipzig is promoting the 'Gründerzeit' (an impressive and rich style of architecture); and (ii) reconstructing a renewed urban image and a new identity in the collective imagination: i.e. Genoa is to be positioned among the second level Italian 'cities of culture' like Turin and Ferrara.

All cities want to provide information to publicize their city's character and personality – combining tangible and intangible product and service characteristics and addressing the experiential and image aspects of the destination. This enables them to increase their market share, face rising competition, enhance competitiveness, or even gain a competitive edge. As a unique selling point – like some other cities such as Barcelona and Prague – Amsterdam wants to let the tourist experience the present and past history of the city. For the cities, cultural heritage plays an important role to link the past with the present.

All cities also want to integrate smaller attractions into city's positioning strategy through developing combinations of (larger/smaller) attractions and through the use of themes such as the year 2008's Hidden Treasures in Amsterdam.

However, the strategies of the three cities – Amsterdam, Genoa, and Leipzig – each have a somewhat different focus on, for example, specific themes, and they also have particular needs to fill gaps and meet the requirements of stakeholders, individual cities, city communities and cultural

heritage sites, by guiding visitors to understand their particular cultural heritage and the places and stories connected to it. Amsterdam has the most specific focus on international tourists and Leipzig the least; the latter also emphasizes the importance of cultural heritage for its own residents. Leipzig wants to invite both the visitors and the residents to discover and experience the areas of 'Gründerzeit' with their typical appearance, in addition to the main (tourist) attractions of that city. The position of Genoa is somewhere in-between with a strong national – Italian – focus, i.e. Genoa is creating urban attractions for families by: (i) implementing art, culture, gastronomy; and (ii) putting together events, cultural attractions, and experience of nature.

In terms of objectives, all cities not only want to increase the number of visitors, but also to extend their 'tourist footprint' by making less well-known areas accessible and to make points of interest (POIs). For instance, Amsterdam is promoting particular eras and the stories of the people who lived then, including, for instance, the music and food of the times. However, Genoa is offering visitors experiences related to Genoa's atmosphere, such as the smell of the fish markets, together with the aroma of new food outlets set up by immigrants in recent years in the historical center. And Leipzig is promoting the cultural heritage of the Gründerzeit in Plagwitz, which at the moment is not well-known and inaccessible. For this objective in particular, Leipzig expects that e-services might help to open up these hidden places and make them accessible for both tourists and residents. It is important to invite visitors as well as residents to the less well-known, often hidden, areas that are related to cultural heritage.

In terms of the e-services contribution, all cities have considered the identification and use of appropriate e-services as an important contribution and support to be implemented to achieve their city's strategy and related objectives. At present, there are already a number of e-services available in Amsterdam, on www.iamsterdam.com. This website provides interactive maps, booking services, journey planners and personalized information. Amsterdam is moving towards delivering e-services on mobile devices that can deliver information during the actual visit, thus, enabling visitors to experience its attractions and learn more about the architecture, monuments and history of the city before, during, and after the visit. The present e-services available for the city of Amsterdam are: interactive map; online booking facilities, journey planners and personalized information.

At present, the Municipality of Genoa has a limited offer – in terms of both quantity and quality – of e-

services. The only e-services presently available for the city of Genoa are: municipality video channel on YouTube and online accommodation booking facilities (in 4 local languages, and 8 regional languages). In Leipzig as well, at present not many e-services are available. The only e-service is an online accommodation booking service (information is available in various languages).

In conclusion, in all three cities the e-services are used not only to promote the cultural heritage of the city but, just as important, to distract attention from the main tourist attractions of the city towards the less well-known – hidden – cultural heritage of the city. The cities want to extend the tourist footfall in order to reduce the pressure on the main attractions and disperse the impact of tourist attention (and spending) over a larger area of the city. E-services are expected to be one of the major tools to familiarize tourists with less well-known cultural heritage attractions in advance of their actual visit of the city.

All cities also realize that they need the support of important stakeholders (departments of the municipality, private companies, and, for instance, representatives of civic organizations) in order to implement e-services successfully. There are different groups of stakeholders, each stakeholder directs and carries out the city's communication strategy and is the main policy body responsible for the city's cultural and (tourism) marketing policy (viz. city branding). Thus, it is of the utmost importance to distinguish stakeholders and involve them into the process, because they are clearly involved in the design and implementation of e-services to promote the cultural heritage of the respective cities.

5. Scenario design and evaluation (Step 2)

In this section, we first work out the future policy scenarios for Amsterdam as an example for each of the three participating cities: Amsterdam, Genoa, and Leipzig (Step 2). These serve as a background for judging the packages of e-services in the three case cities involved (Step 5). A package of e-services is assigned to each scenario. The four city-specific packages of e-services will be presented and discussed in the next subsections for Amsterdam (5.1), Genoa (5.2) and Leipzig (5.3). The scenarios are designed to have a relatively short time horizon (year 2015), because we want to evaluate the impact of e-services which are to be implemented in the near future, and around the extremes of two dimensions: active or inactive local authority intervention, and minimal versus maximal socio-economic opportunities.

To judge the four scenarios for each of the three participating cities, cities marketers gave scores to

express the performance of the criteria for the reference situation, as well as for the four scenarios and their e-service packages. In Amsterdam many e-services already exist, so it is hard to develop scenarios with a large variation. In contrast, in Genoa and particularly in Leipzig hardly any e-services are available at the moment. This gave us the opportunity to develop scenarios, which offer a range of different e-services in terms of both quantity and quality. These four scenarios are scored by the city marketers in Step 5 with regard to the performance of the eight criteria selected by the decision makers in Step 3.

5.1. Amsterdam. In this section we present the results for the first case study: Amsterdam. We will follow the consecutive steps of the framework developed in Section 2.

Scenario 1: The winner takes it all

In 2015, the economic recession has passed and the economy is in full swing again. Belief in the future has returned. However, the past recession has made people aware of the importance of their roots. This awareness meant a boost in the interest for the cultural heritage not only from residents who want to experience how their ancestors have lived, but also from other Dutch and international tourists. In short: national and international tourism is flourishing again and the city of Amsterdam is doing its utmost to attract a fair share of this business. The Municipality of Amsterdam spends a great deal of money on restoring historical sites within the city and on making them accessible to a broad domestic and foreign public. Furthermore, the budget for promoting the city has increased. More attention is paid to attract additional visitors from Europe and let them experience the beauties of Amsterdam by means of a virtual tour before actually visiting the city.

Scenario 2: Rowing upstream

In 2015, the economy is still recovering from the present economic recession. People – local residents, Dutch tourists and foreigners – are still cautious in their spending. As a consequence, it is hard to develop the tourism sector. Nevertheless, the Municipality of Amsterdam still holds on to its strategy to promote the city, and still thinks the implementation of e-services might be an important tool to attract more visitors to Amsterdam. Given the slow economic recovery, there is little room for government spending. Nevertheless the Municipality tries to make the best of the situation. Given the limited financial resources the government has to make a clear selection of priorities. This means that only the most important historical sites can be restored, and the promotion budget is limited. Instead of developing multilingual

e-services, the e-services are only developed in Dutch and English.

Scenario 3: Don't worry, be happy

In 2015, the economic recession has passed and the economy is in full swing (see Scenario 1). The city of Amsterdam thinks that everything is fine as it is, and is rather reluctant to invest in the further development of e-services. Although a considerable amount of money is spent on restoring historical sites to satisfy its residents, the promotion budget has decreased. The Municipality is less interested in (inter)national tourists. They will come naturally by improving the urban quality with the increased quality of the cultural heritage of the city; the news will spread by itself. Receiving the goodwill of the local residents is more important to the Municipality, in view of the coming local elections. Considering the development of e-services, not much has changed compared with the present situation.

Scenario 4: Take it as it comes

In 2015, the economy is still recovering from the present economic recession (see Scenario 2). The city of Amsterdam is no longer interested in attracting additional visitors. It has a hard time facing the real problems of the city: increasing unemployment, decreasing population, increasing crime rates, etc. The budget available to restore historical sites is reduced to a level that just keeps the cultural heritage in a steady state. There is no budget for real improvements nor for the development and implementation of e-services. Visitors, Dutch and foreign, are welcome, but no additional efforts are undertaken to attract them. The e-services provided remain restricted to what was already available in 2009. Many of the e-services are poorly maintained.

Table 4 shows the package of e-services offered in each scenario for the city of Amsterdam.

Table 4. Supply of e-services in the four alternative scenarios for the city of Amsterdam

Package scenario 1	Package scenario 2
<ul style="list-style-type: none"> ◆ Multilingual virtual tours ◆ Multilingual interactive maps ◆ Multilingual online booking facilities ◆ Multilingual journey planners ◆ Multilingual personalized information ◆ Multilingual e-forum/e-participation ◆ Multilingual mobile devices ◆ All contents downloadable/printable 	<ul style="list-style-type: none"> ◆ Virtual tours ◆ Interactive maps ◆ Online booking facilities ◆ Journey planners ◆ Personalized information ◆ E-forum/e-participation ◆ Mobile devices ◆ All contents downloadable/printable
Package scenario 3	Package scenario 4
<ul style="list-style-type: none"> ◆ Virtual tours ◆ Interactive maps ◆ Online booking facilities ◆ Journey planners ◆ Personalized information ◆ All contents downloadable/printable 	<ul style="list-style-type: none"> ◆ Virtual tours ◆ Interactive maps ◆ Online booking facilities ◆ Journey planners ◆ Personalized information

From Table 4 it becomes clear that the e-services, virtual tours, interactive maps, booking facilities, journey planners and personalized information, are present in all four scenarios. This is done because they are already available in the present situation.

5.2. Genoa. In this section we present the results for the second case study: Genoa. Using four scenarios comparable to those of Amsterdam, we came to the following packages of e-services (see Table 5). Table 5 shows the package of e-services offered in each scenario for the city of Genoa.

Table 5. Supply of e-services in the four alternative scenarios for the city of Genoa

Package scenario 1	Package scenario 2
<ul style="list-style-type: none"> ◆ Multilingual municipality video channel (better structured than present one) ◆ Multilingual e-services to get acquainted with the city ◆ Multilingual educational e-tours ◆ Multilingual interactive maps with information for all kinds of activities ◆ Multilingual online booking facilities (accommodation, attractions, theatres) ◆ Multilingual e-forum/e-participation ◆ Multilingual full virtual tours including POIs for the city and its surroundings (linked with city portals) ◆ Downloadable/printable contents (also on mobile devices) 	<ul style="list-style-type: none"> ◆ Municipality video channel (in Italian and English, better structured than present one) ◆ E-service offering POIs for all city districts (in Italian, linked with city portals, however, without a virtual tour) ◆ Interactive maps with information for all kinds of activities ◆ Online booking facilities (accommodation, attractions, theatres) ◆ Downloadable/printable contents (also on mobile devices)

Table 5 (cont.). Supply of e-services in the four alternative scenarios for the city of Genoa

Package scenario 3	Package scenario 4
<ul style="list-style-type: none"> ◆ Multilingual municipality video channel (better structured than present one) ◆ Multilingual virtual tours including POIs for all city districts (not linked with city portals) ◆ Online booking facilities (accommodation, attractions, theatres) 	<ul style="list-style-type: none"> ◆ Municipality video channel (comparable to present one) ◆ E-service offering POIs for the Strada Nuova-Rolli palaces and the direct surrounding cultural heritage (without a virtual tour, poorly updated, not linked with city portals) ◆ Online booking facilities (only accommodation)

From Table 5 it becomes clear that a video channel, an e-service offering POIs, and online accommodation booking facilities are available in all four scenarios. This is done because they are already available in the present situation.

5.3. Leipzig. We now present the results for the third case study: Leipzig. Table 6 shows the package of e-services offered in each scenario for the city of Leipzig.

Table 6. Supply of e-services in the four alternative scenarios for Leipzig

Package scenario 1	Package scenario 2
<ul style="list-style-type: none"> ◆ Multilingual municipality video channel (better structured than present one) ◆ Multilingual e-services to get acquainted with the city ◆ Multilingual educational e-tours ◆ Multilingual interactive maps with information for all kind of activities ◆ Multilingual online booking facilities (accommodation, attractions, theatres) ◆ Multilingual e-forum/e-participation ◆ Multilingual full virtual tours including POIs for the city and its surroundings (linked with city portals) ◆ Downloadable/printable contents (also on mobile devices) 	<ul style="list-style-type: none"> ◆ Municipality video channel (in German and English, better structured than present one) ◆ E-service offering POIs for all city districts (in Italian, linked with city portals, however, without a virtual tour) ◆ Interactive maps with information for all kind of activities ◆ Online booking facilities (accommodation, attractions, theatres) ◆ Downloadable/printable contents (also on mobile devices)
Package scenario 3	Package scenario 4
<ul style="list-style-type: none"> ◆ Multilingual municipality video channel (better structured than present one) ◆ Multilingual virtual tours including POIs for all city districts (not linked with city portals) ◆ Online booking facilities (accommodation, attractions, theatres) 	<ul style="list-style-type: none"> ◆ Municipality video channel (comparable to present one) ◆ E-service offering POIs for the Strada Nuova-Rolli palaces and the direct surrounding cultural heritage (without a virtual tour, poorly updated, not linked in city portal) ◆ Online booking facilities (only accommodation)

From Table 6 it becomes clear that the e-services offering POIs in the city and online booking facilities are present in all four scenarios, although they might vary in quality.

5.4. Specification of criteria for each city (Step 3).

Next, on the basis of the long list of 24 possible and relevant judgment criteria covering all fields of importance concerning e-services for cultural tourism,

the city-specific criteria were selected by the cities' decision makers, based on average scores of importance for all criteria scores, in order to evaluate e-services and put them in a questionnaire. This led to the set of 8 city-specific final judgment criteria for each city concerned (see Table 7). The main basis for these judgment criteria was formed by functional requirements, needs of tourists, and societal impacts.

Table 7. The 8 criteria selected by the participating cities: Amsterdam, Genoa, and Leipzig

Type	Criterion	Amsterdam	Genoa	Leipzig
Functional requirements	Up-to-date information	X		
	Quality of information	X		X
	Podcasts/downloads			X
	Access to booking facilities	X	X	
	Virtual maps	X	X	X
	Multilanguage		X	
	Personalization		X	
User requirements	Function	X		X
	Ease of use	X	X	X
	Content	X		X
	Participation		X	
Societal impacts	Quality of life and sustainability			X
	Cultural profile	X	X	X
	Urban land use		X	

Table 7 shows that the representatives of three cities selected a partly different group of criteria; there are only a few criteria that are shared by all three cities. An important finding is that all three cities' decision makers selected criteria from all three main types of criteria: functional requirements, user requirements, and societal impacts. All the cities decision makers select the criteria 'virtual maps', 'ease of use' and 'cultural profile'. This result suggests that the problem and context-specific situation of each city does matter in the selection of criteria. In total, the cities' representatives select 14 out of 24 different criteria.

5.5. Elicitation of weights for each city (Step 4). Further, once the set of evaluation criteria has been constructed (Step 3), decision makers (online marketers, director of the culture department of the municipalities, non-governmental organizations, geographers working for the municipalities), who were involved in city marketing projects, in particular in the field of cultural heritage and e-services, were asked to judge pairs of criteria considering the importance of the design and the implementation of e-services in each city to promote cultural heritage and tourism in the city (see Table 8). Based on these pairwise comparisons, weight values were determined (Step 4).

Table 8. Weights given by decision makers for each participating city, example of Amsterdam

Criteria	Decision maker 1		Decision maker 2		Etc.	
	weight	rank	weight	rank	weight	rank
Quality of information						
Up-to-date information						
Virtual maps						
Booking facilities						
Function						
Ease of use						
Content						
Cultural profile						

5.6. Assessment of impacts for each city (Step 5). The questionnaire was used during interviews with city marketers, who were responsible for the implementation of e-services in their city in order to identify a set of city-specific weights for the criteria, and to assess the performance of the tourist e-services for the four scenarios (1 = low/bad, 10 = high/good) compared with the scores of the reference situation. In this questionnaire, we presented four different policy scenarios of possible futures for the participating cities in the year 2015 regarding the introduction of e-services to promote the city for tourists and

residents. The four scenarios were assessed compared with this reference situation. Finally, the city marketers (e.g., communications advisor, senior communication consultant, chief of the digital city department, consultant for new technologies of the municipalities, project and office managers of the cities) scored the performance of the e-services in relation to the criteria for the four future policy scenarios (see Table 9), which refers to future tourist e-service scenarios. These scores were compared with the scores of the reference situation in a structured way in an impact matrix (Step 5).

Table 9. Scores of performance of e-services in the present situation and the scenarios by city marketers, example of Amsterdam

Interviewees	City marketer 1					City marketer 2					Etc.	
	Ref	Sc 1	Sc 2	Sc 3	Sc 4	Ref	Sc 1	Sc 2	Sc 3	Sc 4	Ref	Etc.
Quality of information												
Up-to-date information												
Virtual maps												
Booking facilities												
Function												
Ease of use												
Content												
Cultural profile												

Note: Ref = reference (present situation), Sc 1 = Scenario 1, etc.

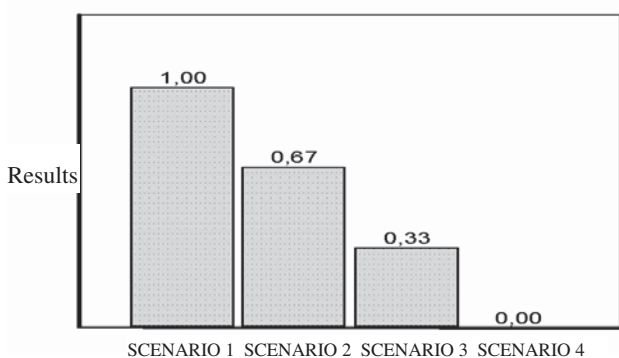
Finally, after consulting the city experts, the above-mentioned scenarios, comprising various types of e-services for the participating cities

(Amsterdam, Genoa, and Leipzig), were evaluated using the Regime method explained in Section 4.

6. Empirical results of the case study research (Step 6). In this section, we apply a multi-criteria (MCA) evaluation method in all the case studies; we conducted a Regime analysis, in which the set of weights of the criteria and the scores of the criteria for each scenario are used to evaluate the performance of each scenario (Step 6). The main aim of the analysis, conducted with the Regime method, is to investigate, which set (package) of e-services is preferred by which decision maker. Furthermore, by using different data sets of performance scores for each package of e-services, we are able to test the robustness of the results. The information, obtained by holding surveys with the decision makers and city-marketers in the participating cities, enables us to construct various data sets (Figure 2), which can be analyzed by means of the Regime method.

6.1. Amsterdam. In this section we present the results for the first case study: Amsterdam. In Amsterdam Scenario 1 (100 per cent) always scores best and Scenario 4 (0 per cent) always worst, regardless of the weights attached to the criteria. This is, of course, mainly due to the package of e-services offered in each scenario (see Table 5).

Figure 2 shows that in every economic scenario Package 1 of e-services reaches the first position in the ranking (100 per cent), followed by Scenario 2 (67 per cent) with Package 2 of e-services, and Scenario 3 (33 per cent) with Package 3 of e-services. Scenario 4 with Package 4 of e-services was not chosen (0 per cent) in any situation.



Note: for the four individual scenario packages, see Tables 2, 4 and 5.

Fig. 2. Ranking of scenarios and packages of e-services obtained with Regime analysis for the city of Amsterdam

The economic situation seemed to have an influence not only on the scores given to the criteria, but also on the composition of the packages of e-services and the languages used.

Package 1 seems to be the best supply of e-services both in quantitative and qualitative terms. The sensitivity analysis shows that no matter what set of weights is used in the Regime analysis, Package 1 will always attain the first position. The scores of this Package are so high that it always outperforms the other packages. The opposite holds for the fourth package of e-services.

The city of Amsterdam already offers many e-services, available in Dutch and English. The main improvement would be to make them multilingual, e.g., German, French and Spanish versions (a difference between Scenario 1 and Scenario 2) and, downloadable/printable content (lacking in the e-service package of Scenario 4). E-participation/e-forum (the difference between Scenario 2 and Scenario 3) and mobile devices (which are included in Scenario 2 and lacking in Scenario 3) seem less important. However, the quality of the languages is very important: the translations should be done by native speakers. Finally, the city of Amsterdam has to improve its e-services with respect to the following criteria:

- ◆ Ease of use: the promotion of cultural heritage can only go well if the e-services are easy to use and give a positive perception. A user is either won or lost in the first minute of use. The Internet plays a central role in the promotion before the visit, so easy-to-use services are important.
- ◆ Content: Does the user value the content of the e-services? This is an important question in measuring satisfaction.
- ◆ Function: The user has to be satisfied with the functions of the e-services. Measuring the satisfaction and reacting to it are very important for proper e-services.

In conclusion, the city of Amsterdam should focus on the development of multilingual e-services and downloadable/printable content. E-participation/e-forum and mobile devices seem less important.

6.2. Genoa. Here we present the results for the second case study: Genoa. In general, the stakeholders gave the highest scores to Scenario 1 (100 per cent), and the scores gradually get lower in Scenarios 2, 3 and 4 (which offers the least e-services both in quantity and quality). However, there are some exceptions. In Scenario 2, the multilingual aspect of e-services scores relatively low because of the high cost of translations. However, Genoa should focus on international tourists; the Italian home market is too small.

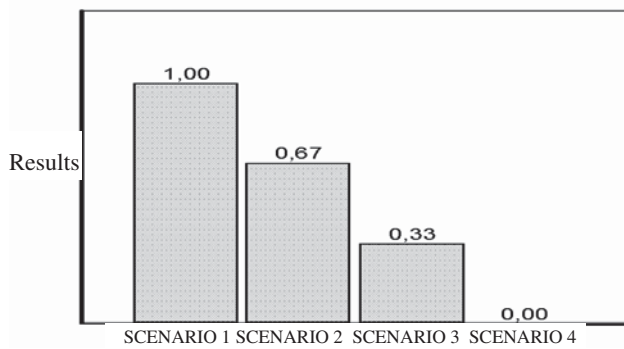


Fig. 3. Ranking of scenarios and packages of e-services obtained with Regime analysis for the city of Genoa

Figure 3 shows that regardless of the weights of the criteria, Scenario 1 performs best (100 per cent) and Package 1 of e-services (in Scenario 1) outperforms all other packages, which was expected, given the quantity and quality of e-services in this package, followed by Scenario 2 (66 per cent), 3 (34 per cent), and 4 (0 per cent). The scores become gradually lower in last three scenarios, Scenario 4 offers the least e-services (both in quantity and quality). In Scenario 2 people will invest, given the economic upswing (the Municipality is inactive), while people in Scenario 3 will not invest much because of the economic recession. Obviously, people expect strong improvements in the near future.

At present, the Municipality of Genoa has a limited offer – both in quantity and quality – of e-services. Via the MySpace site ‘Genoa Hub’, the opportunity already exists to participate actively. However, the city marketers claim that although many Italians visit this site, they only announce their entry to the site, but do not really participate in discussions. The marketers think this inactive behavior is a common problem in Italy.

The main conclusion that arises from the Regime analysis is that it is better for the city of Genoa to focus on the development and implementation of a limited number of multilingual e-services, (compared with offering a wide range of e-services, available only in Italian), and on the provision of virtual maps:

- ◆ Multilingual: Our aim is to involve an increasingly wider user target.
- ◆ Virtual maps: Geo-referencing the cultural heritage and the events is a priority.

This conclusion is based on the fact that in the Regime analysis the e-service package of Scenario 2 (66 per cent) is able to outperform both Scenario 3 (34 per cent) and Scenario 4 (0 per cent). This conclusion is further supported by all stakeholders involved in this research who selected multilingual e-services as one of the eight most important criteria, followed by virtual maps. This is interesting because Scenario 3 offers less e-services compared with Scenario 2. However, in Scenario 3 the e-

services are multilingual, whereas in Scenario 2 the e-services are only available in Italian and English. It should be noted, however, that Scenario 2 does indeed perform less well on the criterion multilingual than Scenario 3. In Scenario 2 the multilingual aspect of e-services scores relatively low because of the high cost of translations.

However, Genoa should focus on international tourists; the Italian home market is too small, and, therefore, Genoa has to improve its e-services on the criteria multilingual, because their aim is to involve an increasingly wider user target.

6.3. Leipzig. We now present the results for the third case study: Leipzig. Leipzig is developing an active cultural tourism policy, its e-services packages for the scenario experiment were given in Section 3.3. Just as in Amsterdam and Genoa, in Leipzig Scenario 1 (100 per cent) also always performs best, followed by Scenario 2 (67%), Scenario 3 (33 per cent), and Scenario 4 (0 per cent). The latter always performs worst, regardless of the weights attached to the criteria.

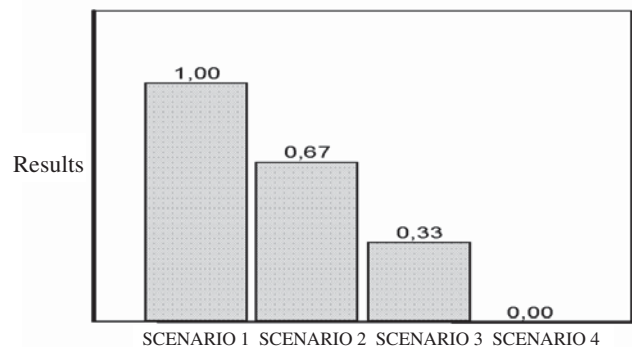


Fig. 4. Ranking of scenarios and packages of e-services obtained with Regime analysis for the city of Leipzig

Figure 4 shows that in every economic scenario, Package 1 of e-services (see Table 5), which is assembled for Scenario 1, comes on the first position in the ranking (100 per cent). Not only does the economic situation have an influence on the scores on the criteria, but so also do the composition of the packages of e-services and the languages used. Package 1 of e-services always outperforms the other packages. The opposite holds for the package 4 of e-services. Package 1, in Scenario 1, seems to provide the best supply of e-services in both quantitative and qualitative terms. The sensitivity analysis shows that no matter what set of weights is used in the Regime analysis, Package 1 will always attain the first position, followed by Packages 2, 3, and 4.

Therefore, the development of interactive maps in Scenario 2 seems to be more important than extending the e-service to offer information about specific points of interest (POIs) for all city districts with a multilingual virtual tour (Scenario 3). Only

when the virtual map of Scenario 3 is included, even though people give virtual maps the highest score, Scenario 3 is able to outscore Scenario 2. Further, according to city marketers, podcasts and downloads will become of increasing importance when less e-services are offered, which explains the relative increase in the importance of podcasts and downloads in Scenario 4.

Leipzig is currently not endowed with many e-services. But the information provided is of high quality. However, decision makers need to put considerable emphasis on the information, provided by the various e-services considered and their ease of use. Therefore, the main improvement can be made with respect to the criteria:

- ◆ Quality of information: When explaining and interpreting the 'Gründerzeit' to both residents and visitors, it is important to have high quality information, so that the complex issue of 'Gründerzeit' can be illustrated as clearly as possible.
- ◆ Ease of use: Only if there is ease of use the users can and will reveal their experiences and enhanced interaction.
- ◆ Content: Relevant content is the foundation of presenting 'Gründerzeit'.

In conclusion, the results were rather similar in all three case studies. The scenario, in which there was an active local authority and maximal socio-economic opportunities, outscored all other scenarios. The opposite scenario (inactive local authority, minimal socio-economic opportunities) scored worst. This was to be expected: Scenario 1 offered by far the most and the best e-services, the latter by far the least and poorest. The intermediate scenarios were most interesting, because the quantity and quality of e-services were rather similar in Scenarios 2 and 3.

In general, the scenario with an active local authority and minimal socio-economic opportunities (Scenario 2) performed better than the scenario with an inactive local authority and maximal socio-economic opportunities (Scenario 3). However, sensitivity analysis showed that, with some minor adjustments of the weights of the criteria, there were situations in which Scenario 3 performed better than Scenario 2. Obviously, the quantity and quality of e-services were rather close in the packages of e-services offered in Scenarios 2 and 3.

Conclusions and policy recommendations (Step 7)

In this paper we have presented a new systematic and operational policy support framework for urban stakeholders in the tourist sector who want to evaluate the impact of the development of e-services

to promote the cultural heritage in cities, in particular from the perspective of tourism, as a tool for strengthening the local economy. Modern cities are challenged to reinforce their economic base by means of new creative opportunities. The framework is applicable for a variety of cities that want to evaluate their strategy by considering the development of e-services to promote the cultural heritage of their city in this today's challenging business world.

The feasibility of the above policy support system was tested by means of a real-world application to three cities in Europe, Amsterdam, Genoa, and Leipzig. The results show that the evaluation framework works and provides extremely useful insights for urban stakeholders.

Based on a literature study and actual case study research for the cities of Amsterdam, Genoa, and Leipzig, 9 quantitative and 17 qualitative strengths and 7 qualitative weaknesses (referring to control and strategy reasons for use) were identified, which are to be expected of importance for using e-services. The implementation and use of e-services yields specific benefits for various stakeholders (e.g., municipality, city marketers, private companies, and, for instance, representatives of civic organizations). Turning these impacts into measurable indicators allowed us to support the decision process to select a package of e-services to be implemented by means of multi-criteria analysis.

The availability of, and access to, advanced e-services have a significant impact on tourist behavior. Not only has the search for tourist destinations and facilities changed significantly (though the use of Internet services), but so also has the organization and booking of trips.

We conclude, therefore, that a systematic definition and mapping of a rich diversity of perceptual and attitudinal elements that characterize the (current or future) profile of a city for visitors is a feasible activity. In this strategic assessment exercise, the potential of e-services in the tourist sector was highlighted, taking into account that there is a wide spectrum of e-services that may favor the tourist sector in a city with an attractive cultural heritage profile. E-services have turned into a strategic vehicle for modern tourist policy. The use of local expertise is critical for the systematic analysis of future options. Likewise, it is also of critical importance to exploit local knowledge in developing and generating policy priorities regarding the specific criteria that govern the city's interest in tourism strategies from the perspective of sustainable cultural heritage.

In our application of the framework for the participating cities of Amsterdam, Genoa, and Leipzig we have developed strategic policy scenarios and have applied Regime analysis to evaluate the effect of those policy scenarios. This turned out to be a very promising operational approach, with a full participation of urban stakeholders. Using scenarios, it appears that the decision makers and marketers of the participating cities consider multilingual features (including French and German), as well as downloadable or printable content very important aspects in a poor economic situation (inactive local authority, minimal socio-economic opportunities), referring to Scenario 4.

However, for attracting (young) tourists interested in intangible cultural heritage, an e-forum, as well as interactive games could be useful tools. These tools could also be useful in changing the image of the city for younger visitors. The role of e-services in setting the overall strategic direction can affect the coordination of functional activities and their outcomes in cities or particular destinations, including their contribution towards immediate adaptation to market changes and shortages.

The evaluation methods used here have a general applicability to other types of evaluation. Here we

have developed strategic policy scenarios for tourist e-services, but one could also compare different combinations of e-services to find out which set of e-services has the most favorable impact. For instance, if one wants to develop two e-services and has three options (let us assume, interactive maps, virtual tours, and online booking facilities), multi-criteria analysis can be applied to select the optimal combination: either interactive maps and virtual tours, or interactive maps and online booking facilities, or virtual tours and online booking facilities. In addition, for such policy questions, relevant criteria can be identified and weighted by decision makers.

Our methodology, thus, offers a general architecture – or conceptual framework – for a policy-oriented strategic choice. It allows the incorporation of single e-services or packages of e-services in the tourist sector, and will be of great importance as a decision-making aid tool for urban tourist policy, as highlighted by the case studies in this report.

A limitation of the research is that this research is not longitudinal. Longitudinal studies would better examine the advantages, disadvantages and control and strategy of the implementation of e-services over time impacts.

References

1. Bruinsma, F.R., P. Nijkamp, R. Vreeker, K. Kourtit, T. Koppig, E. Wolf and P. Dallorso (2009), Supporting decision making in the cultural sector. Deliverable 3.4, ISAAC, EU, Brussels.
2. Chacko, H. E. (1997), Positioning a Tourism Destination To Gain a Competitive Edge. *Asia Pacific Journal of Tourism Research*, 1(2): 69-75.
3. Buhalis, D. (2003), *E-Tourism, Information Technology for Strategic Tourism Management*, Prentice Hall, London.
4. Forte, F., Fusco Girard, L., and Nijkamp, P. (2006), Smart Policy, Creative Strategy and Urban Development, *Studies in Regional Science*, 35 (4): 947-963.
5. Giaoutzi, M. and Nijkamp, P. (eds) (2006), *Tourism and Regional Development: New Pathways*, Ashgate, Aldershot, UK.
6. Girard, L.F., Montis, A., De and Nijkamp, P. (2008), *International Journal Services Technology and Management*, 10 (1).
7. Goeldner, C.R. and Ritchies, B.J. (2006), *Tourism: Principles, practices and philosophies* (10th Ed.). New Jersey: John Wiley and Sons, Inc.
8. Grandi, S. (2005), GIS and Territorial Marketing. The case of the Factory Outlet Centre in Castel Guelfo, *Economics and Geography of Tourism*, The opportunities presented by Geographical Information Systems (GIS), Bologna: 161-173.
9. Hinloopen, E., P. Nijkamp and P. Rietveld (1984), The Regime Method; a New Multicriteria Method, *Essays and Surveys on Multiple Criteria Decision Making* (P. Hansen, ed.), Berlin, Springer: 146-155.
10. Holden, A. (2000), *Environment and Tourism*. London: Routledge.
11. Massey, A.P, Khatri, V. and Montoya-Weiss, M.M. (2007), Usability of Online Services: The Role of Technology Readiness and Context, *Decision Sciences*, 38(2): 277-308.
12. Kaplan, M.D. (2009), The Relationship between Perceived Innovativeness and Emotional Product Responses: A Brand Oriented Approach. *Innovative Marketing*, 5 (1): 42-50.
13. Matias, A., Nijkamp, P and Neto, P. (eds) (2008), *Advances in Modern Tourism Research*, Physika-Verlag, Heidelberg.
14. Minghetti, V. (2003), Building customer value in the hospitality industry: towards the definition of a customer-centric information system, *Information Technology and Tourism*, 6 (2): 141-52.
15. Nijkamp, P., P. Rietveld and H. Voogd (1990), *Multicriteria Analysis for Physical Planning*, Amsterdam, Elsevier.
16. Piccoli, G., O'Connor, P., Capaccioli, C. and Alvarez, R. (2003), Customer relationship management – a driver for change in the structure of the US lodging industry, *Cornell Hotel and Restaurant Administration Quarterly*, 44 (4): 61-74.

17. Ray, C. (1998), Culture, intellectual property and territorial rural development, in *Sociologia Ruralis*, 38: 3-20.
18. Scavarda, A.J., Lustosa, L.J., and Scavarda, L.F. (2001), The tourism industry chain, Proceedings of the Twelfth Annual Conference of the Operations Management Society (POM 2001), March 30-April 2, 2001, Orlando FL.
19. Sureshchandar, G.S. and Leisten, R. (2005), Holistic scorecard: strategic performance measurement and management in the software industry. *Measuring Business Excellence*, ABI/INFORM Global, 9 (2): 12-29.
20. UN WTO (2006), World Tourism Barometer, World Tourism Organization, Madrid, 4 (1).
21. Werthner, H., Klein, S. (2000), ICT and the changing landscape of global tourism distribution, *International Journal of Electronic Commerce and Business Media*, 9/4:256-62.