A SYSTEMATIC LITERATURE REVIEW ON AIR TRANSPORT AND TOURISM: ANALYSIS FROM 54 JOURNALS DURING THE PERIOD 2000-2014

ABSTRACT
Today’s tourism industry is not possible without air transport, modern airports infrastructure, efficient and safe airline services and worldwide air transport networks. According to the WTO report (2006), 40% of the international tourists now travel by air. The main purpose of this paper is to review the literature of air transport and tourism research. A systematic literature review (SLR) method was used to analyse relevant articles from 54 ABDC list journals ranked A*, A or B, published in period 2000-2014. This paper provides a summary of the trends and research themes identified. Key researchers, as well as their institutions and geographical locations are also mapped. The findings have shown a growing interest in researching and publishing on this subject. The use of SLR has allowed areas for future studies to be identified.

Keywords: Air transport; Aviation; Tourism; Systematic literature review

INTRODUCTION
Air transport and tourism are highly connected and in many cases overlap. Numerous studies have shown that air transport has an important influence on a destination’s economy, including tourism. According to Bieger and Wittmer (2006), tourism is a driving factor and a stimulator of changes in air transport, as well as air transport influences tourism by opening new destinations and tourism forms such as long-haul travel. The lack of academic papers reviewing both the air transport and tourism literature led to this paper. A literature review is a useful first step in determining areas for further study. This aims to contribute to map out the current state of the literature on these two key industries, while at the same time identifying potential areas for future research.

The main aims of this literature review are to identify major issues and trends in the tourism and air transport literature and to present a framework for classification and analysis, as well as literature gaps.

LITERATURE REVIEW
Modern tourism is impossible without air transport, airports infrastructure, and worldwide air transport networks. The development of air transport and tourism are dependent on each other and this relationship is taken into account either implicitly or explicitly in the business models both fields adopt (Bieger & Wittmer, 2006; Forsyth 2006, 2010; Duval 2013). Air transport is important for tourism development. Macchiavelli and Vaghi (2003) found air accessibility was a factor in tourism development in Southern Italy. Tourism is highly influenced by international airline alliances through fare and total travel time reductions, better connectivity, convenient schedules and stronger tourism destination marketing initiatives (Morley, 2003). While alliances have general impact, single carries could also influence the tourism development of certain destinations. Chung and Whang (2011) stated that LCCs (low cost carriers) stimulated new demand for Korean islands, as well as tourism jobs growth and income. Similar research conducted by Donzelli (2010) identified that LCCs have positive impact on local economy and tourism in Southern Italy. Some 40% of international tourists travel by air (Dobruszkes & Mondou, 2013). Aviation regulatory regimes underpin air travel, since regulation may restrict the range of routes operated by airlines, prevent competition and control fares, thus restricting the tourist business and influencing its spatial patterns (Forsyth, 2008). The importance of aviation
liberalization, air transport policies and “open skies” agreements and their impact on tourism has been discussed through different case studies (Dobruszkes & Mondou, 2013; Zhang & Findlay, 2014).

On the other hand, the literature concerning the direct impact of tourism on air transport is more limited. Growing tourism demand requires airport infrastructure development (Martin-Cejas, 2010), as well as development of new airport routes (Halpern & Graham, 2015). Lohmann et al. (2009) compare the orchestrated approach combining airline, airport and tourism strategies for two case studies; Singapore and Dubai.

Analysis of a body of literature may be undertaken through a variety of different review methods (meta-analysis, narrative method, and systematic literature review). Tourism, as a research discipline, is widely connected with other disciplines that has led to numerous literature review papers, on topics as diverse as tourism and sport (Weed, 2006; Weed et al., 2014) and Chinese tourism (Keating & Kriz, 2008; Tseng et al., 2015; Zhong, Wu, & Morrison, 2015). Such reviews may undertake bibliographic analysis techniques to examine co-authorship networks within hospitality research (Ye, Li, & Law, 2013) and geographic analysis of tourism research (Shen et al., 2014). Literature reviews on air transport research field are more limited in comparison, even though the volume of air transport related papers has been growing rapidly over last decade (Kaps & Philips, 2004; Ginieis et al., 2011; Ginieis et al., 2012).

A number of previous researches have highlighted the lack of studies on the overlap between air transport and tourism industries. Duval (2013) has highlighted the gap between air transport and tourism research and presented three main common practical issues: “(1) the economic regulation of international commercial air transport; (2) the relationship between destinations, connectivity and airline business models; and (3) the relationship between aviation-related emissions and climate policies” (Duval, 2013, p. 495). Apart from this study other literature reviews of air transport and tourism are not available suggesting a need for further research.

METHODOLOGY

For the purpose of this analysis, a systematic literature review (SLR) approach will be used. Systematic reviews differ from traditional narrative reviews in the way they provide objective, replicable, systematic, and comprehensive coverage of a defined area (Weed, 2006). The SLR requires carefully documenting all the procedures undertaken such that another researcher could replicated it (Ginieis et al., 2012). This type of review is systematic because the methods used to survey the literature, and then select papers to include, are explicit and reproducible (Pickering and Byrne, 2013). The advantage of this type of review is that similar results should be obtained if the procedure is repeated.

For the purpose of this study articles published in ABDC list A*, A and B journals between 2000 and 2014 in the field of tourism and air transport are in scope.

For the sake of this research, a two-stage approach for the sampling of "air transport" and "tourism" journal articles was undertaken. In the first step, papers were selected based on certain keywords - ‘tourism’, ‘tourist’, ‘airline’, ‘aviation’, ‘air transport’ and ‘air transportation’. The purpose was to develop a broadly understanding on how 'air transport' and 'tourism' interface has been progressing. In a second stage, only paper where "air transport" and "tourism" related keywords were closed to each other were selected and analysed, as described below.

Stage 1
Journals from the ABDC (Australian Business Deans Council) 2013 list that comprised the 1506 (tourism) and 1507 (transport) Fields of Research (FoR) codes were examined only those ranked as A*, A or B (n= 74) were selected. Given the aim of this review is to analyse the literature in tourism and air transport, 12 journals whose focus clearly was not directly relevant to the interface between tourism and air transport were excluded. Those journals examined topics such as 'accident investigation', 'technology', 'safety', 'infrastructure', 'information technology', 'automotive technology', 'vehicle engineering' and 'quality assurance'. Eight other journals not available as part of databases readily available were excluded. The journals excluded are listed in Note 1 of Figure 2.

From the original 74 tourism or transport related ABDC journals, 54 journals were further analysed and papers from the 15 year period 2000-2014 selected using two criteria.

1) For tourism journals, papers with any of the following words were selected, i.e. ‘aviation’, ‘airline’, ‘air transport’ or ‘air transportation’, either in the title, abstract or keyword sections.

2) For transport journals, we selected papers where the following words were found in the title, abstract or keyword: ‘tourism’ or ‘tourist’ together with either ‘airline’, ‘aviation’, ‘air transport’ or ‘air transportation’.

A total of 329 journal articles were obtained from 36 different journals. Hence, 18 of the original 54 journals did not publish any paper as per our criteria. These journals are listed in the Note 2 of Figure 2.

Stage 2
To understand the relationship and the strength of the papers on how close they were on the "air transport" and "tourism" interface, we run all the 329 papers through DEVONThink Pro software. DEVONThink Pro is a Mac based software for creating a database, organizing data, research and gathering ideas into groups. The criteria chosen was to use the NEAR function where DEVONThink Pro would identify the number of occasions where certain words were close to each other. In our case we selected the following boolean operators: ‘tourism’ or ‘tourist’ (‘touris*’) occurring three words from ‘aviation’, ‘airline’ or ‘air transport’. Results are presented in Table 1.

<table>
<thead>
<tr>
<th>Search criteria</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>“touris*” NEAR/3 “aviation”</td>
<td>67</td>
</tr>
<tr>
<td>“touris*” NEAR/3 “airline”</td>
<td>73</td>
</tr>
<tr>
<td>“touris*” NEAR/3 “air transport”</td>
<td>110</td>
</tr>
<tr>
<td>Total (excluding repeated articles)</td>
<td>158</td>
</tr>
</tbody>
</table>

Hence, from Stage 2 some 171 articles were excluded and not considered for further analysis. The outcome from this selection was validated by randomly selecting and reading 10 papers that had been excluded. These papers were related to: tourism and hospitality human resources industry; tourism destination image; trade in airline services; airline market segmentation; environmental reporting in airline industry; measurement of air traffic volume; destination and market share analysis; airline sales; space tourism; airline deregulations etc.
Hence, while related to either "air transport" or "tourism", these papers did not necessarily have a strong link to both "air transport" and "tourism".

Data analysis

The next step was to analyse data relevant from all the 329 journal articles using one Excel spreadsheet, with following data collected:

- Authors: names of authors were standardised as in some instances the same author has used different names in various papers;
- Affiliation of authors: we standardised all institutions, for example removing "the" in front of the names of some universities. As much as possible, we tried to write the full name of the institution, avoiding acronyms and abbreviations. In some cases authors listed their departments, rather than their universities and we made sure that the name of the organisation was used instead. In rare cases we amended the name of the institution where mistakes were found;
- Country of the affiliation: in the cases where authors had multiple affiliations we used the first one provided;
- Year of publication;
- Title of paper;
- Title of journal;
- Keywords: all keywords provided by the authors in the journal article.

This spreadsheet was used to develop a descriptive analysis of the data listed with the aim to understand how the field has evolved through the years, identify the main authors/institutions and journals that publish on the interface between "air transport" and "tourism".

A thematic analysis was also undertaken. Describing the predominant research themes and topics within the selected articles is an important objective of any literature review paper (Zhong et al., 2015). A second step in data analysis was then to identify the research themes of selected 158 papers, using the text of their abstracts. According to Fereday and Muir-Cochrane (2006), thematic analysis is a search for themes through a process of theme identification by careful reading and re-reading of the data. For the purpose of this study, both inductive and deductive theme analysis approaches were used.

From a deductive approach, the structure provided by Ginieis et al. (2012) is appropriate as it identifies main themes in air transport body of work between 1997 and 2009. These authors have identified 11 themes that are used as an initial deductive analytical framework:

- **airports**: including airport infrastructure, airport taxes and different case studies;
- **alliances**: agreements between different airlines;
- **costs**: air transportation costs;
- **environment**: covering issues such as CO2 and fuel emissions, sustainable development;
- **finances**: the capital structures of airlines, profitability, productivity and efficiency;
- **management**: air transport management, notably airline crews, industrial policies and flight scheduling;
- **modelling**: referring to models, algorithms and mathematical formulas for calculating different variables related to air transport;
- **networks**: air routes and airspace configuration;
- **passengers**: passenger demand, pricing and ticketing;
- **regulation**: air transport deregulation, privatizations and transport reforms;
safety: passengers health and safety, travel-related diseases and aviation accidents.

On the other hand, considering the need to adjust the themes of this paper on air transport and tourism, an inductive approach was also used (Goddard and Melville, 2004) using Leximancer software. Leximancer is different from other content analysis softwares (e.g. NVivo, ATLAS, CATPAC) as it does not apply word frequency or coding of terms and phrases. Leximancer works with its own algorithms by extracting the main concepts and ideas (Tseng et al., 2015). It analyses the meanings within passages of text by extracting the main concepts and ideas. Leximancer is used by psychologists to study human language, in qualitative health research and in undertaking literature reviews (Tseng et al., 2015). Leximancer has also been applied in tourism and hospitality research to identify event images in newspaper reports (Scott & Smith, 2005), and to analyse travel blogs as a destination image formation agent (Tseng et al., 2015). The Leximancer analysis identified three new themes (airlines; aviation market and tourism destinations) and four themes previously identified by Ginieis et al. (2012) (airports; alliances; management and environment/sustainable development). In total, 14 different themes were used for allocation of 158 selected papers.

THE STATE OF THE ART OF THE AIR TRANSPORT AND TOURISM LITERATURE

This section analyses the 329 journal articles selected. The spreadsheet developed as described on Section 3 was analysed using Tableau Desktop, Version 9 to analyse and visualize the data and results (www.tableau.com).

Figure 1 shows the number of publications that in the period 2000 to 2014. The graph shows a flat trend to 2007 and then between the years 2008 and 2014, a continuous and sustainable growth, with an increase from 22 journal articles in 2008 to 37 journal articles in 2014. Over the 15-year period, the number of publications per yearly has more than tripled, from 12 in 2001 to 37 in 2014.

Figure 1: Number of air transport and tourism publications per year (2000-2014) - n=329.
Of particular interest is to examine the journals that most commonly feature publications in air transport and tourism (Figure 2). Out of a total of 36 journals publishing 329 journal articles, only a quarter of the journals (n=9) were on transport, responsible for publishing only 17% (n=56) of the total number of journal articles. Hence, it is possible to conclude that tourism journals are the preferred outcome for publications on air transport and tourism, eventually reflecting the higher interest of tourism scholars in researching on this topic, in comparison to transport academics. Tourism Management is the leading journal with 54 articles, followed by the Journal of Air Transport Management (JATM) with 30 and the Journal of Travel and Tourism Marketing with 27 publications. After the JATM, the second transport journal to publish more papers is the Journal of Transport Geography, ranked in an overall 13th position, with nine articles in the 15-year period analysed.

Figure 2: Number of published articles in tourism and transport journals (2000-2014) - n=329.

Notes:
(1) List of the journals that are excluded from the search: Accident Analysis and Prevention; IEEE Transactions on Intelligent Transportation Systems; IEEE Transactions on Vehicular Technology; Journal of Safety Research; Transportation Research Part C: Emerging Technologies; European Journal of Transport and Infrastructure Research; Information Technology & Tourism; International Journal of Automotive Technology; International Journal of Vehicle Design; Journal of Vehicle


Identifying the leading researchers (n=551) in this field is also appropriate to understand who are the key scholars contributing to advance the academic field on air transport and tourism. The leading researchers with eight publications each are Stefan Gössling and Paul Peeters, followed by Sung Hyup Hyun, with six, and Frédéric Dobruszkes, Peter Forsyth, Rob Law, Davoud Nikbin, Beverly Sparks and Richard Tol, each with five publications. Figure 3 provides the list of researchers who have authored at least three publications.

Figure 3: Researchers with at least three publications (2000-2014) - n=551

Sum of Number of Records for each Author. The view is filtered on sum of Number of Records, which ranges from 3 to 9.
While Figure 3 provides the authorship per publication, examining the share of authorship is also important. While in general, joint authorship has the benefit of increasing collaboration with the aim of providing richer and more robust academic contributions, sole authorship is also worth examining considering the efforts to publish alone. A total of 84 journal articles (25.5%) were solely authored, 137 journal articles had two authors (41.6%), 78 journal articles (23.7%) had three authors and 26 journal articles (7.9%) four authors. Ye, Li, and Law (2013) indicated that team size in the tourism research field is generally not large. In their research sample (n=4,615 papers) the largest number of articles was solely authored (40.5%), followed by two authors’ articles (37.7%) and three authors (17.19%). The highest number of co-authored articles in our research sample indicates that air transport and tourism might require interdisciplinary engagement, fostering teamwork collaborations.

To analyse the contribution of authors we allocated the author of a sole authorship paper an index 1, two authors (0.5 each), articles with three authors (0.33 each) and so on. All the shares were summed, with Figure 4 presenting researchers with the equivalent of at least two sole papers when accounting share authorship.

Figure 4: The list of authors with the highest share of authorship - n=551

It is also worth examining what are the institutions that have the largest contribution in a particular field. This is relevant to identify where are located the groups of academics with a strong interest in the interface between air transport and tourism. As shown in Figure 5, Hong Kong Polytechnic University is the world’s leading institution in this field with 35 publications, nearly three times more than the University of Surrey (UK) and the University of Waterloo (Canada), both ranked second with 13 publications. The only other university with more than ten publications is Griffith University, in Australia, with 12 publications. Other leading universities with at least ten publications are Bournemouth University (UK), University of New South Wales (Australia), University of Girona (Spain) and NHTV Breda University of Applied Sciences (The Netherlands).
The geographical distribution of the institutions is presented at Figure 6. Not surprisingly, considering we have only selected journal articles published in English, the top three leading countries are developed Anglo Saxon countries, respectively USA (n=115), UK (n=109) and
Australia (n=73). Besides those native English speaking countries, in addition to Canada (n=30) and New Zealand (n=26), the list of top 10 countries are comprised by Asian countries, namely Taiwan, Korea and Hong Kong with respectively 54, 40 and 37 publications, and Spain (n=50) and The Netherlands (n=17). Surprisingly China only had four publications, which is quite a poor performance considering that the country has been a leading one in terms of tourism publications (Shen et al., 2014).

Figure 6: Countries of institutions whose authors have published on air transport and tourism (2000-2014) - n=239.

In terms of world distribution of the most prominent tourism and air transport and tourism research institutions, interesting comparison could be made with research conducted by Shen et al. (2014) on geographic analysis of tourism research. By analysing one decade of tourism and hospitality research (2002-2011), Shen et al. (2014) indicated China, as the most prominent country in tourism research, while China obtained 27th position in our research. USA is the first ranked country in our research and second ranked country in comparison research. Both researches stated the same rank of UK, Australia, Taiwan and Spain. The small rank variations are present in cases of Canada, New Zealand and Korea. In our research The
Netherlands was ranked 10th, while its rank is much lower (39th) in comparison research. Opposite case is noticed for Turkey which is ranked 10th in Shen et al. (2014) research, with 23rd position in our research.

CONTENT ANALYSIS

In this section, 158 selected papers were analysed with Leximancer software in order to identify the main research themes in the abstract text of the each paper. A total of seven main themes were identified (Figure 9):

1. Aviation market: costs, carriers and charter services, regional routes;
2. Airports: capacity, carrier services, routes, passenger experiences;
3. Sustainable development: climate changes, emissions, tourism policies, aviation policies;
4. Airlines: networks, low-cost services, passengers;
5. Alliances: safety regulations, service quality, marketing;
6. Management: information models, research, crews;
7. Tourism destinations: air transport and tourism case studies.

Figure 9. Thematic map of air transport and tourism research in period 2000-2014
Both deductive and inductive approaches were used in order to identify themes. Even though these approaches used opposite techniques, some of identified themes are the same or very similar ones, including airports; alliances; management and environment/sustainable development. Three other "air transport and tourism" inductive themes emerged; i.e. airlines; air transport market tourism destinations. The remaining seven themes costs, finances, models, networks, passengers, regulations and safety were the same proposed by Ginieis et al. (2012). A comparison of both deductive and inductive approaches to identified research themes is presented in Table 2.

Table 2. Comparison of deductive and inductive approaches identified themes (n=158)

<table>
<thead>
<tr>
<th>Deductive approach</th>
<th>Inductive approach</th>
<th>% of papers with theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airports</td>
<td>Airports</td>
<td>6.37%</td>
</tr>
<tr>
<td>Alliances</td>
<td>Alliances</td>
<td>5.10%</td>
</tr>
<tr>
<td>Environment</td>
<td>Sustainable development</td>
<td>23.57%</td>
</tr>
<tr>
<td>Management</td>
<td>Management</td>
<td>7.64%</td>
</tr>
<tr>
<td>Finances</td>
<td></td>
<td>0.00%</td>
</tr>
<tr>
<td>Passengers</td>
<td></td>
<td>11.46%</td>
</tr>
<tr>
<td>Models</td>
<td></td>
<td>1.27%</td>
</tr>
<tr>
<td>Networks</td>
<td></td>
<td>4.46%</td>
</tr>
<tr>
<td>Costs</td>
<td></td>
<td>1.27%</td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td>7.64%</td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td>1.91%</td>
</tr>
<tr>
<td>Airlines</td>
<td></td>
<td>7.64%</td>
</tr>
<tr>
<td>Tourism destinations</td>
<td></td>
<td>5.10%</td>
</tr>
<tr>
<td>Air transport market</td>
<td></td>
<td>8.92%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>7.64%</td>
</tr>
</tbody>
</table>

The PDF files of the selected 158 journal articles were entered into NVivo 10. The main advantage of using NVivo for this purpose is the possibility of coding all abstracts easily using the 14 different themes.

As per Table 2, the “environment” theme is the most frequent, accounting for just over 23% of the published journal articles. There were no published papers in the “finance” theme. The theme “passengers” is the second most important one, with 11.46% of publications. The
“passenger” category was third in the aviation literature review conducted by Ginieis et al. (2012). In the same air transport literature review, “environment” contributed only 5.4% of the overall sample. The number of “environment” publications among air transport and tourism papers is due to a greater focus on climate change and sustainable development questions in tourism research.

“Management”, was the most populous category in the study by Ginieis et al. (2012) but was only in fifth position among air transport and tourism research studies, with 7.64% of overall articles. Other categories included “aviation market” (8.92%), “airlines” (7.64%) and “regulations” (7.64%).

These results demonstrate a wide variety of research topics are found in the aviation and tourism field.

**DISCUSSION AND CONCLUSION**

This study has provided a literature review of articles published between 2000 and 2014 on a specific topic of air transport and tourism in the best ranked list of ABDC tourism and transport journals. The growing interest of academics in this topic is demonstrated by the constant increase in number of publications (from 12, in 2001, to 37, in 2014). The journal with the largest number of papers was Tourism Management (54 articles). Since only articles published in English were taken into consideration, the leading Anglo Saxon USA, UK and Australia is not an unexpected result. The Hong Kong Polytechnic University is the leading producer of air transport and tourism research papers, while Stefan Gössling (Norway/Sweden) and Paul Peeters (The Netherlands) are found as the most prominent researchers.

An important aim of this paper was identifying the main research themes by using both deductive and inductive approaches. “Environment” was the most dominant research topic indicating that beside economic benefits, air transport and tourism development as effects on climate changes, CO2 emissions and sustainable development policies. The second theme, “passengers” is an important area of overlap between air transport and tourism research. On the one hand number of tourists using the air transport is increasing and on the other, not all passengers are tourists, but their experiences and preferences are doubtless important both for air transport and tourism stakeholders. As Bieger and Wittmer (2006) state, the development of air transport and tourism relies heavily on each other and this relation is taken into account either implicitly or explicitly in both fields adopted business models. Other emerging topics of interest among tourism and air transport researchers are “management”, “air transport market”, “airports”, and “airlines”. The lack of interest for research topics such as “costs”, “models”, “finances” and “safety” is expected since majority of researchers are more tourism oriented. Higher representation of these themes is found in air transport literature review paper conducted by Ginieis et al. (2012).

The main contribution of this study for academic audience can be found in describing air transport and tourism research patterns. The themes identified describe prominent areas of air transport and tourism research. Research areas such as environment, passenger experiences, airports and airlines are overlapping topics for both tourism and air transport researchers. This study has a number of limitations; first that not all relevant academic journals were not taken into consideration, since only those on the ABDC list. A second limitation is that only journals published in English were examined. Future researchers may wish to examine
themes in more details by describing methodology, and types of data collected. Further analysis of the co-authorship networks and citation counts may also be very valuable.

REFERENCES


