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# Evolution of the intellectual structure of research on pricing strategy of low cost carriers

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#### ABSTRACT

Low Cost Carriers played a significant role in the evolution of air passengers transport industry. Many researchers showed how, since the first experiences of Southwest and the leading role of Ryanair and EasyJet, the dynamics of pricing contributed to modify behaviors of customers, competitors and other stakeholders. Furthermore, the liberalization of markets enhanced these effects, still requiring a certain degree of support from governments and regulators. Even if lesson learned from the most successful cases can help to identify some general results and specific drivers of success, a general framework to describe and explain the role of different contributions and experiences is missing. This paper offers an extensive and complete literature review on Low Cost Carriers' pricing policies, strategies and practices to identify current and modern trends, trying to answer to the still open research questions in the field. By the application of Factor Analysis and Multi-Dimensional Scaling, this paper identifies the main streams of research and address potential future directions.

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#### 1. Introduction

Even considering the pioneering experiences that followed the Airline Deregulation Act of 1978, it is in the last two decades that the development of Low Cost Carriers (LCCs) played a significant role in the evolution of air passengers transport industry. LCC seats represented 26.3% of all seats worldwide in 2013, with peaks of 57.7% in Southeast Asia and 58.4% in South Asia (Pearson, O'Connell, Pitfield, & Ryley, 2015). Although the US Southwest developed the first LCC model in the 1970s, only in the 1990s LCCs became a wider phenomenon, with the birth of Ryanair in 1992 and EasyJet in 1995.

The traditional approach of LCCs used to rely on a general set of service features, such as on-line booking system and no free in-flight comfort, using homogeneous fleets and secondary airports. However, this business model evolved over years, adjusting to the development of customers, industry, market and regulations. The analysis of successful cases becomes thus relevant to highlight the adoption of different policies, strategies and practices, according to specific management choices.

As the LCCs' ability of adjusting prices represents their core business factor, this article aims to investigate this specific research domain to understand the characteristics of LCCs, the reasons behind their spread and success and, lastly the effects in the market. This paper, by reviewing twenty years of literature from 1996 to 2016, aims to describe the evolution of LCC business models, with particular reference to their

pricing policies, strategies and practices, along with the relationships with customers, market and concurrent carriers. It aims to understand the current state of the art of this research stream and the potential future directions. To this purpose, we adopted a groundbreaking and robust methodology, based on the bibliometric method of co-citation analysis, to ensure objectivity in the review and identify the intellectual structure of the research field.

The paper illustrates a methodology that, after a systematic search and through a co-citation analysis, shows the evidences that arise from the most relevant academic journals. The results of the study highlight six sub-domains, which address six different streams that will be discussed in terms of implications, limitations and future evolutions.

#### 2. Methodology

The co-citation analysis is a method to analyze links among articles contributing to the same research field with the aim to uncover its intellectual structure (Shafique, 2013) and to recognize patterns within a research field (Di Stefano, Gambardella, & Verona, 2012). The main idea of this bibliometric technique is that the more two articles are cited together, the more they should belong to the same sub-research stream, even if they do not come to an agreement (Annarelli & Nonino, 2015).

The first stage of the methodology is a full research of all the papers in the scope (e.g. articles related to LCCs pricing policy, LCCs pricing strategy and LCCs pricing practices in all of the research subfields relating to management, business, economics and social science). After the identification of the set of articles, two different multivariate techniques

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identify and characterize the intellectual structure: factor analysis and multidimensional scaling. The factor analysis is a data reduction technique for emerging a research fields' underlying structure, according to various degree of relationship among the papers (Pilkington & Meredith, 2009). Factor analysis categorizes the articles in factors that represent groups of publications that may belong to fields, subfields or a core set with commonalities. Multidimensional Scaling (MDS) depicts graphically the conceptual proximity between the publications and it is useful for a better understanding the state of art (Ramos-Rodríguez & Ruíz-Navarro, 2004).

#### 2.1. Searching and selecting the articles

The scope of the literature research is the Scopus database, limited to academic articles in English published or accepted until the end of 2015, including those published in 2016 but accepted in 2015. Consequently, we performed a systematic search in the database using the ("Low Cost Carrier" OR "Low Cost Airline" OR "Discount Carrier" OR "Discounted Carrier" OR "Low Fare Carrier" OR "Low Fare Airline" OR "New Entrant Carrier") AND ("pricing" OR "price") in the fields: "title, abstract, keywords", finding 417 documents (413 in English) that mainly refers to the subject areas of "Business, Management and Accounting", "Social Science", "Decision Sciences", "Engineering" and "Economics, Econometrics and Finance". As a final step, we performed a full-text analysis in order to select only the articles in the specific research domain of air passengers' transport; as well as papers with complete references, obtaining a set of 360 articles.

The topic of pricing strategy is attracting great research interest starting from 2009, as confirmed by the growing trend of the number of articles in the last 5 years (Fig. 1). Although the first paper is in 1992, the significant increase of the number of paper in academic journals or conferences started from the biennium 2003–2004.

#### 2.2. Identifying the core structure

Co-citation analysis requires counting the frequency a selected pair of works is cited together.

First, a citation matrix of the full set of 360 papers reports, in rows and columns respectively, the cited papers and the citing papers.

Then, a co-citation matrix reports the co-citations frequencies where rows and columns are the articles in the set, while cells represent the number of times each pair of papers has been cited together. Through the co-citation matrix, it is possible to exclude a group of papers not cited together with any other paper, reaching a core set of 156 papers (Table 1).

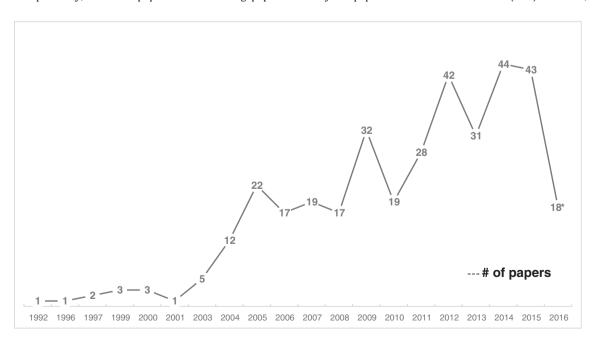
The next step creates a matrix of Pearson's correlation coefficients from the  $156 \times 156$  matrix of co-citation frequencies. Correlation represents a measure of similarity between two works: the higher the positive correlation, the higher the similarity between the two (White & McCain, 1998). Moreover, correlation coefficients are preferable to cocitation frequencies because the data are standardized and the number of zeros reduced, thus providing a better basis for statistical analyses (Rowlands, 1999). The correlation matrix is the input of the multivariate techniques, factor analysis and multi-dimensional scaling, to generate and interpret findings.

#### 3. Findings

#### 3.1. Findings from systematic literature search

Paper not cited are 106 (the 29,44% of the total), while 98 papers, even if cited, have never been cited together with any other paper in the panel of 360. Table in Appendix A shows that the full set of articles presents 3359 citations from the Scopus database with an average number of citations per paper of 9.33. The 156 papers of the core set received 2935 citations (87% of the total) with an average number of citations per paper of 18.81. The 360 papers were published in 156 journals, conferences or books, while the core set refers to 45 journals. In particular, the most frequent are Journal of Air Transport Management (57 papers), Journal of Transport Geography (15 papers), Transportation Research Part E: Logistics and Transportation Review (13 papers) and Tourism Management (10 papers).

Papers published by Journal of Transport Geography received an average number of citations of 28.87, Journal of Air Transport Management 20.54, Tourism Management 20.20 and Transportation Research Part E: Logistics and Transportation Review 17.31. Econometrica has the higher average number of citations but this value derives from only one paper that is also the most cited (115) of the set, i.e. "Market



<sup>\*</sup>accepted in 2015 and published in 2016

Fig. 1. Selected publications per year.

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