

The airline industry and the development of the business models: a study of their relationship and its implications. BERGIANTE, Níssia C.R.; SANTOS, Márcio P. de S., ESPÍRITO SANTO JR., Respício A.

THE AIRLINE INDUSTRY AND THE DEVELOPMENT OF THE BUSINESS MODELS: A STUDY OF THEIR RELATIONSHIP AND ITS IMPLICATIONS.

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ABSTRACT

With the changes in the operational environment of the air transport industry taking place in many levels such as economic and market scenario, airlines are now involved in a dynamic and complex system. However, planning a way to take into account all these current factors is only achievable with an adequate comprehension of how the current business models answer this challenge. This analysis is essential to allow some airlines to position themselves, deciding whether they would keep their present business models or making different choices. So, this paper aims to understand the relationship among business models development and the airline industry based upon the development of academic publications.

Keywords: Air Transport, Business Models, Bibliometrics studies

INTRODUCTION

Many authors have been arguing the importance of the scientific production evaluation. This assessment, due to the right choice of reliable methods, is able to present to the society how some knowledge have been developed and how it has contributed to solve problems in its areas of influence (Vanti, 2002).

Historically, the genesis of the term Bibliometrics is not consensus being, many times attributed to Alan Pritchard whom, in 1969, used the name in his work entitled "Statistical bibliography or bibliometrics?". However, in 1934 this term have been discussed by Paul

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Otlet in his text "*Traité de documentation; le livre sur le livre; théorie et pratique*" (Otlet, 1934), which contained a chapter named "*Le Livre et la Mesure. Bibliométrie*". But Otlet's source is well known as Edward Wyndham Hulme, that coined the term "Statistic Bibliography" in his study called "Statistical bibliography in relation to the growth of the modern civilization" (Fonseca, 1973; Costa, 2012)

E. Wyndham Hulme was a pioneer by proposing the use of mathematical tools for bibliographic data analysis. He suggested that development of the civilization could be observed by the text produced since different historical periods are reflected in the literature. He declares:

My thesis is to ascertain and illustrate by bibliographical data various stages in the development of the mechanics of civilization. Hence while philosophers treat civilization as an end-product I deal with it as an organic growth so far as this growth can be correlated with the recorded intellectual activities of the several periods. (Hulme, 1922, pp.7)

However the main idea of his proposal is bibliographical data could not be restricted to library's shelves organization and classification. To Hulme (1922) "a book classification is not a classification of knowledge". To prove his proposal, he applied some statistics analyses of patents published in England during the Industrial Revolution period as a way to understand how and under which circumstances this movement had emerged. In this context he affirms that:

A patent is, of course, an administrative act, but the patent specification is an original bibliographical document which lends itself readily to statistical treatment. It can boast a continuity of well authenticated data for which there is no parallel in statistical literature. By correlating patent statistics with other data such as the growth of scientific literature, industry, commerce or population, we obtain some idea of the interrelations of these factors at different periods and of the changes in society with which they are associated. (Hulme, 1922)

This historical debate is relevant since reflects the development of the bibliometrics term as a scientific area. Pritchard (1996) explained it as "the application of mathematics and statistical methods to books and other media of communication". This definition is significant since establishes the needed of quantitative tools in the progression of models and measurement' systems to enable the evaluation of publications. (Pritchard, 1969; Tague-Sutcliffe, 1992)

Indeed, the application of bibliometric techniques allows a great spectrum of analysis such as (1) research subject evolution and its trends; (2) authors productivity and collaboration; (3)

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scientific production of countries and research centres and (4) forecasting new research themes (Vanti, 2002).

It is well known that the global competition has challenged companies to increase their decision-making capacity and to improve their flexibility so, knowing and understanding the interlinked factors that have an effect on their market may be an important step to create assertive business models. So, a better understanding of this subject, by any industry, could make a real difference.

In order to justify the main objective addressing in this paper we briefly discussed the declaration of Giovanni Bisignani, CEO (Chief Executive Officer) of IATA (International Air Transport Association) from 2002 to 2011, whom, in the 2011 annual report stated “Airlines are safer, greener, and leaner after a decade of change. But profitability is still pathetic. No single action will be a panacea for four decades of 0.1% average net profitability. (Iata, 2011, p.6)”.

In fact, the answer to the “pathetic” profitability may be related to lack of availability of appropriate relationship between Air Transportation sector and its Business models (Gudmundsson, 1999; Tretheway, 2004; Alamdari, 2005; Graf, 2005; Gillen e Gados, 2008; Zott, 2008; Teece, 2010; Nair, Palacios e Ruiz, 2011). In the context of this paper, the bibliometric analysis of the business models and air transport subjects is seen as a way to assess patterns and needs building a robust database that can help academic researches and companies to achieve better results in their studies.

ASPECTOS METODOLÓGICOS

The evolution of business models theory and the air transport market were investigated by doing a bibliometric analysis. Data collection involved an extensive research based in ISI-Web of Knowledge database. All the files retrieved are managed in software called Endnote and then exported to another software called RefViz in order to be compiled and evaluated. Criteria to refine the database are based on the clusters evaluation. Third step includes qualitative bibliometric analysis in the refined database and the review of the business models and their relationship with the airlines scenario.

So, the steps involved in the data research can be seen in Figure 1.

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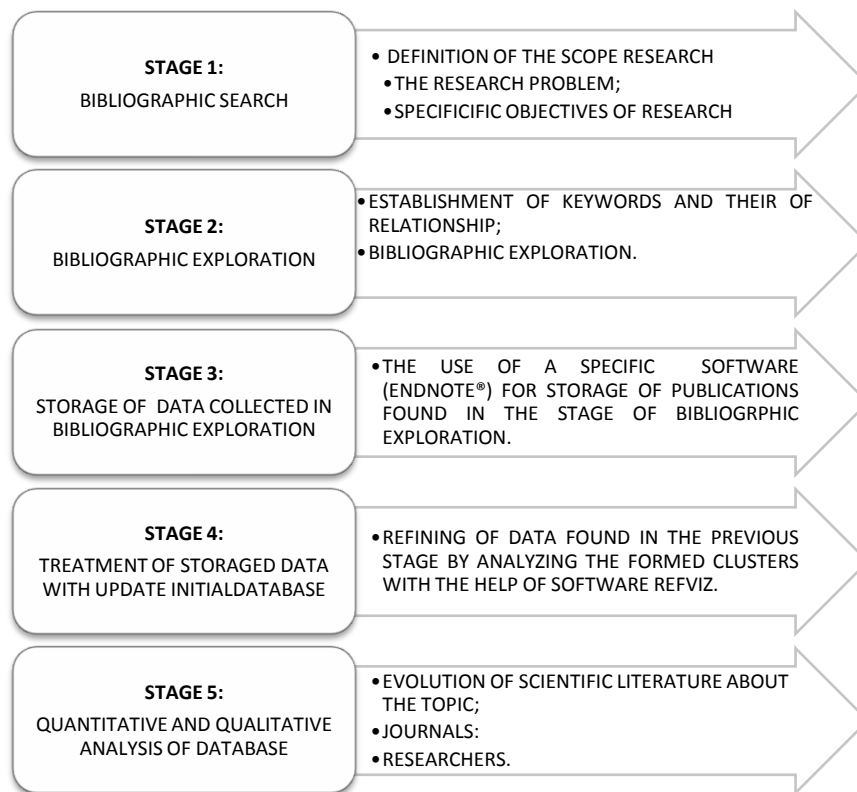


Figure 1 – Methodology
Source: Adapted from (Motta, 2011)

The methodological aspects used in this work will follow the proposal made by Motta (2011) but adapted to the reality of the research now performed.

ABOUT THE SOFTWARE USED IN BIBLIOMETRIC STUDY

Two software will be used in the development of this paper, the EndNote® and REFVIZ™. The version of EndNote® software that will be used in this work is the EndNote® X5. All data researched and organized in the database software were imported into EndNote® and REFVIZ™ for the best viewing and refining (White, 2008). The REFVIZ™ can manage up to 30,000 references and the version used in this study is the REFVIZ™ v2.1.

Briefly, for a better understanding of the use of the two software (EndNote® and REFVIZ™) shows the relationship between the flow of activities to be undertaken in this paper and the two software.

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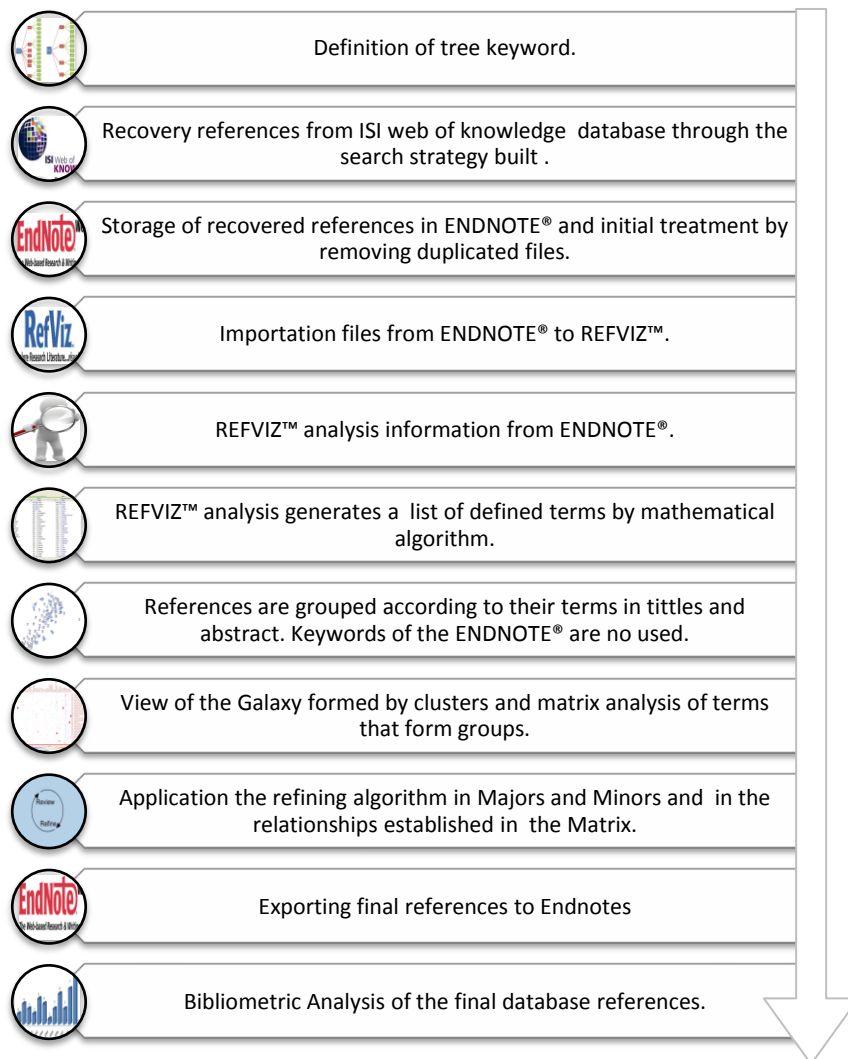


Figure 2 – Operating flow proposed

Finally, in Figure 3, we show the description of the algorithm to be used for refining the database by textual analyses (formed terms) and evaluating the set of clusters.

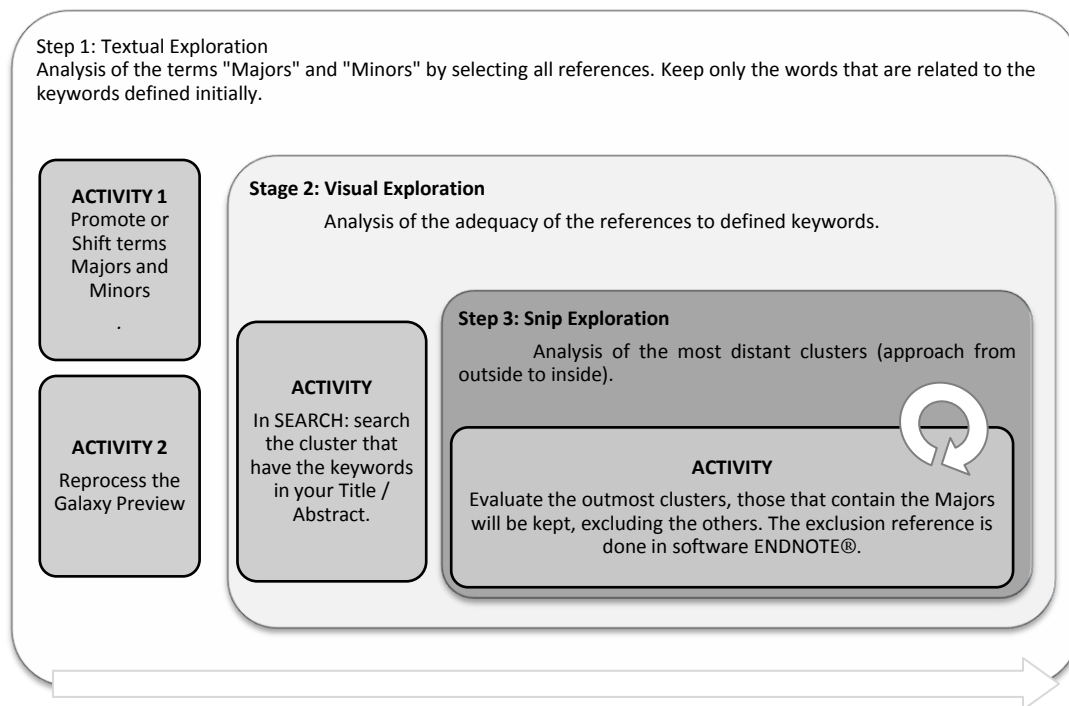


Figure 3 - Algorithm for refining the references in REFVIZ™.

Completing characterization of the methodological process and tools that will support the research, we present, at the following item, the results of applying the methodology

RESULTS

To defining a good selection of keyword to be used in the database selection it was performed a previous consult with a specialist in the area of the research. His suggestions were complemented by observation of the terms used in current publications (year 2012) made on some important journals in the area of Air Transport such as European Journal of Transport and Infrastructure Research, Journal of Air Transport Management, Transportation Planning and Technology, Transportation Quarterly and Transportation Research.

The result of the activity Definition of keywords can be seen at Figure 4.

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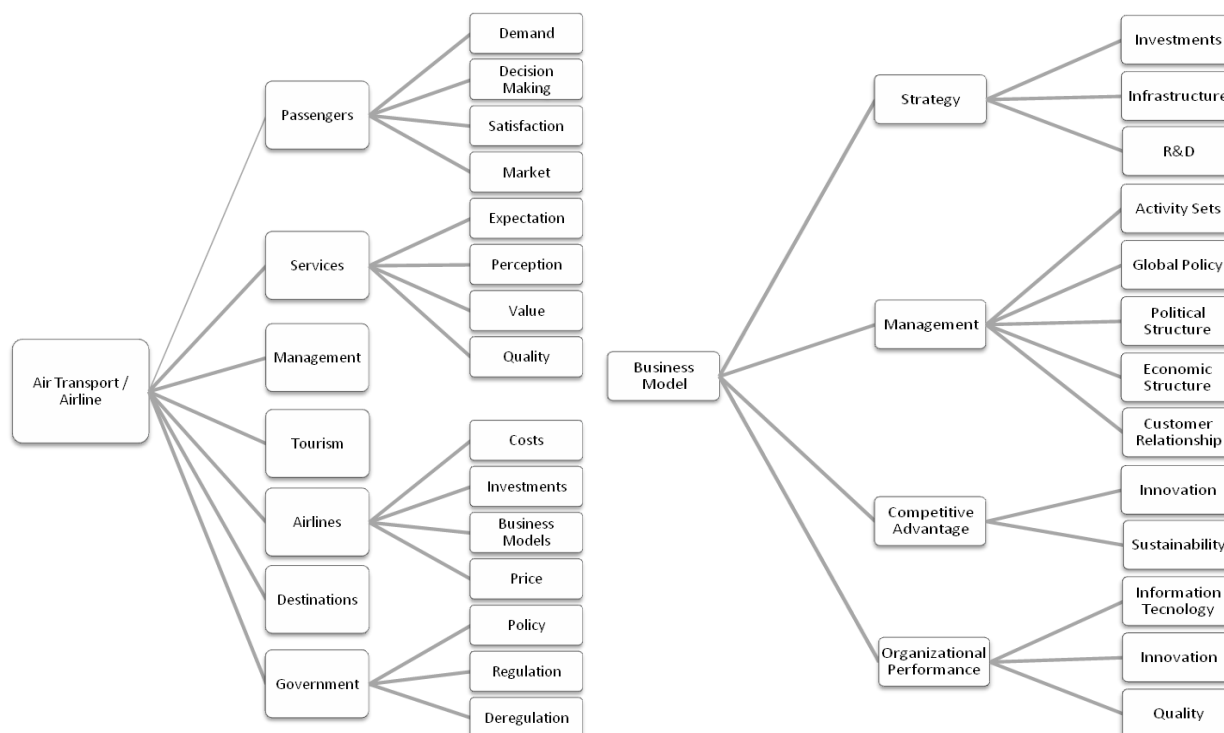


Figure 4 - Keywords tree: Air Transport and Business Models

After the definition of keywords it is possible initiating the bibliographic exploration. To do so, it was established some search criteria, as can be seen in Table 1.

Table 1 – Bibliographic Search Criteria

SEARCH CRITERIA	DEFINITION
Time interval took into account for publications	From 1990 up to 2012 -. Expanded to minimize the error in the subjective choice of period do período (Samiee, 2012).
Database	ISI Web of Knowledge
Tree Keywords searched in	Title Keywords Abstract

Based upon those criteria it was performed Bibliographic exploration stage. In order to use the function Online Search of the software EndNote®, all terms in the tree keywords were combined according to the Boolean operators “and” and “or”. All references retrieved by the software's functionality were organized according to their matching group.

This step has returned a total of 18,798 articles. However, it was necessary to eliminate duplication in the results retrieved, resulting in a database of 11,132 articles. Then, this database was exported to REFVIZ™ software so as to starting the step 4 of the methodology: the clusters analysis performed by the algorithm of the software. Since

REFVIZ™ deletes files that have no title or abstract the final database consisted of 10,403 references.

In this database was applied the algorithm proposed in Figure 3. It was performed three iterations of the algorithm and many cycles of step 3, reducing the original database from 10,043 to 497 documents. The difference between the initial database and the last one can be analyzed by comparative images in Figure 5.

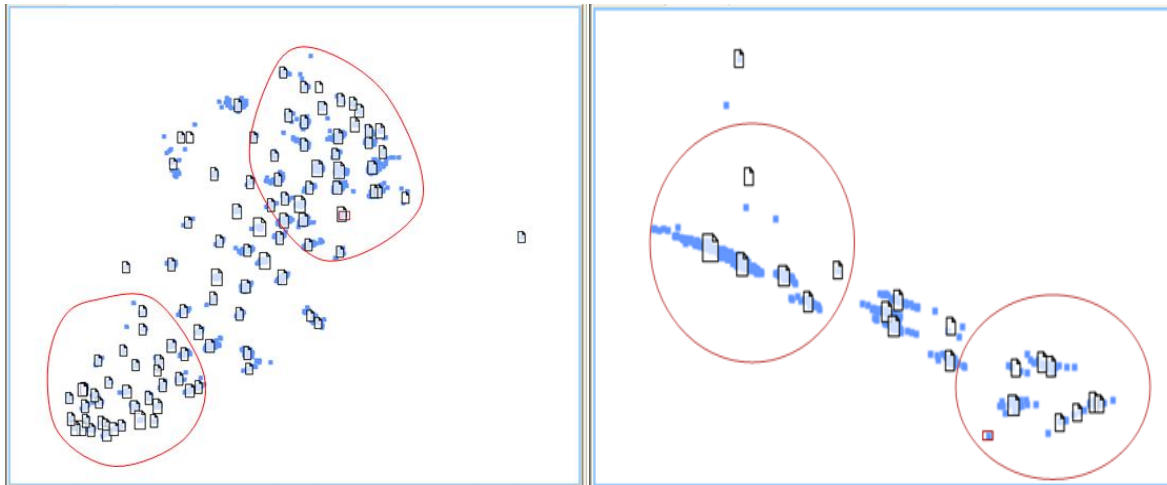


Figure 5 – Comparison of initial and final database galaxy.

By the red circles in the Figure 5 it is possible to observed two distinct groups connect by some clusters in the galaxy produced by the RefViz software. These images are due to the two main subjects of the research and their linked area represents all papers that discussed both terms.

In the final database were evaluated three indicators, (a) Evolution of scientific production of Air Transport and Business Models research areas, (b) Main Journals and (c) Researchers. They are explained below:

1. Development of scientific literature on the topic: analyze the growth trend of publications on the subject areas of science involved (analyzed by the main keywords used) and the relationship of these terms with the tree of keywords proposed;
2. Journals: analyze the main journals of publication and the importance of each one to the areas (discussed via impact factor);
3. Researchers: analyze the productivity of authors and countries.

Analysis of the evolution of scientific production

Although the Business Model theme has great importance to the area of air transport, as well as for business in general, based on Chart 1 , we noted that research on these subjects achieved greater prominence from 2001. However, in 2002 occurs a fall in the number of publications. This peculiarity can be explained, in part, due to the attacks on New York and Washington in this period. At this time, it was brought up a great concern about the future of air transport, when it came to one of its largest markets, the United States. This time of uncertainty and fear explains the market downturn in 2001-2002 periods which might also have been reflected in the number of publications on the subject.

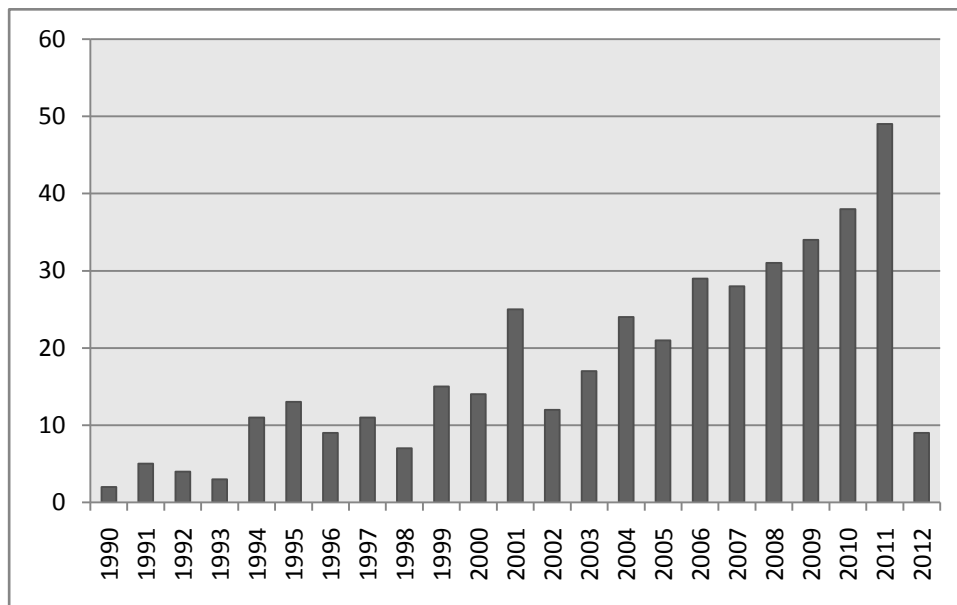


Chart 1 – Total annual publications related to Business Models and Air Transport themes.

On the other hand, apart from the period discussed before, it is possible to notice that the number of publications has increased over the years. This is an interesting indicator of the importance the issue has taken in academic field. Publications in 2012 still should not be considered in its entirety since this paper research was completed by the beginning of the 2012 first semester. The results of the most used keywords can be seen in Chart 2.

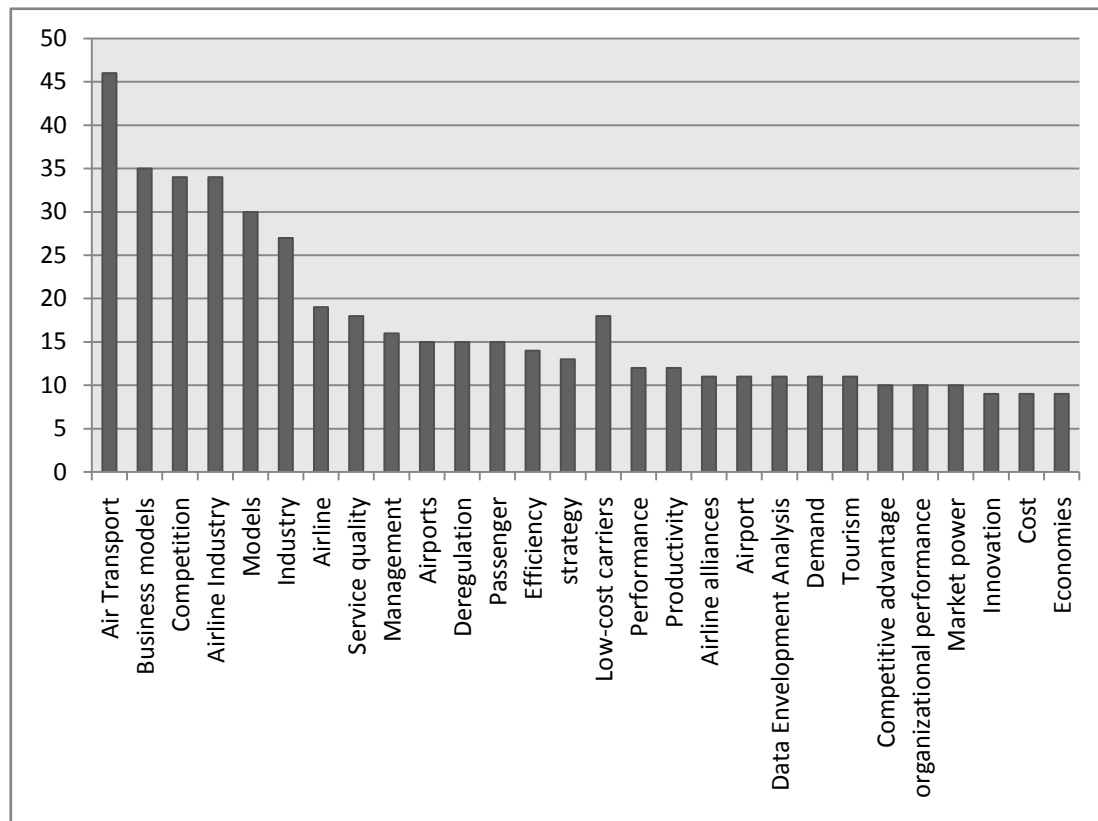


Chart 2 - Occurrence of keywords

In relation to all the terms that have been recurring over the study it was observed that much of them could be found in the keyword tree earlier in this paper. This result corroborates the research in journals and with an expert to define the words that would be the basis of research. Some terms have been, in fact, essential to the research. Others, however, could be discarded because they did not influence the results. In terms of words of 1 ° and 2 ° level (Tree) stand out words such as "destination" and "government", little found in some selected references.

Analysis of Scientific Journals in Publication

The most common scientific journals comprised the database can be displayed in Chart 3. An interesting to note in this graph is that apparently the first 10 journals are distributed as follows: 70% related to air transport and the other 30% (without considering their contribution to the quantitative basis) related to business models.

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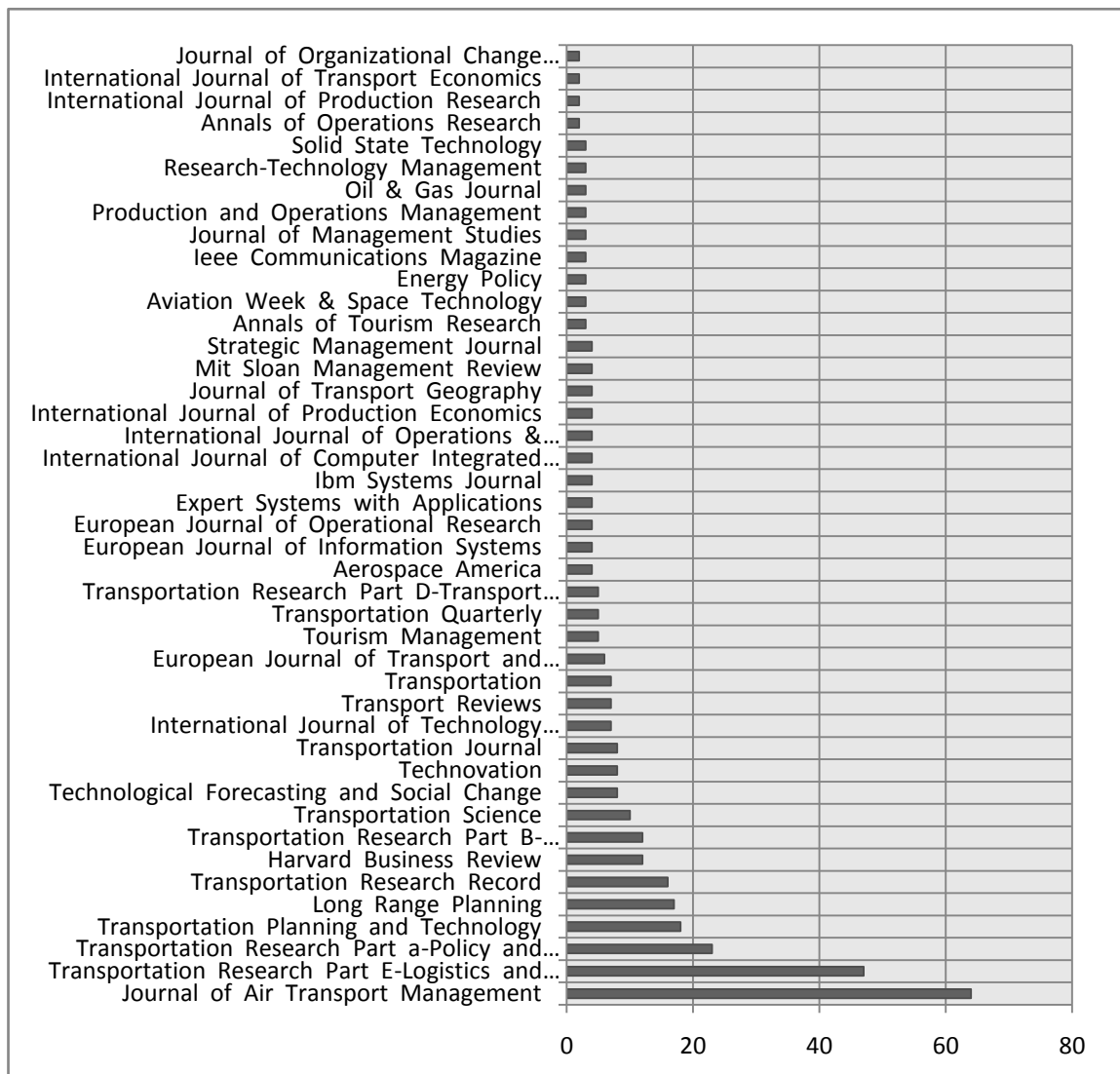


Chart 3 – Scientific Journals

An interesting to note in this graph is that apparently the first 10 journals are distributed as follows: 70% related to air transport and the other 30% (without considering their contribution to the quantitative basis) related to business models. However this analysis is not entirely correct, since the journals may publish papers that discuss both issues. Thus, for a more detailed observation of journals contributions to the database, it is needed to analyze which themes are more predominant in the papers that formed the database. This analysis can be seen in the Table 2.

Table 2 – Analysis of the relationship between Journals, Papers and Themes

JOURNAL	REFERENCES	SUBJECT:
		(1) BM – BUSINESS MODEL (2) AT – AIR TRANSPORT
Journal of Air Transport Management	64	AT

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Transportation Research Part E-Logistics and Transportation Review	47	AT
Transportation Research Part a-Policy and Practice	23	AT
Transportation Planning and Technology	18	AT
Long Range Planning	17	BM
Transportation Research Record	16	BM
Harvard Business Review	12	BM
Transportation Research Part B-Methodological	12	AT
Transportation Science	10	AT
Technological Forecasting and Social Change	8	BM
Technovation	8	BM
Transportation Journal	8	AT
International Journal of Technology Management	7	BM
Transport Reviews	7	AT
Transportation	7	AT
European Journal of Transport and Infrastructure Research	6	BM/AT
Tourism Management	5	AT
Transportation Quarterly	5	AT
Transportation Research Part D-Transport and Environment	5	AT
Aerospace America	4	AT
European Journal of Information Systems	4	BM
European Journal of Operational Research	4	BM
Expert Systems with Applications	4	BM
Ibm Systems Journal	4	BM
International Journal of Computer Integrated Manufacturing	4	BM
International Journal of Operations & Production Management	4	BM
International Journal of Production Economics	4	BM
Journal of Transport Geography	4	AT
Mit Sloan Management Review	4	BM
Strategic Management Journal	4	BM
Annals of Tourism Research	3	AT
Aviation Week & Space Technology	3	AT
Energy Policy	3	BM
Ieee Communications Magazine	3	BM
Production and Operations	3	BM

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Management		
Oil & Gas Journal	3	BM
Research-Technology Management	3	BM
Solid State Technology	3	BM
Annals of Operations Research	2	BM
International Journal of Production Research	2	BM
International Journal of Transport Economics	2	BM/AT
Journal of Organizational Change Management	2	BM

To compound this table, it was chosen 42 journals, prioritized by Pareto analysis. The journals listed in this analysis are responsible for 361 papers in the final database, which means that, 42 journals account for 80% of the database built and may be considered the most important publishing mechanisms.

In relation to the table results they do not mean that, for example, all 64 papers of the Journal of Air Transport Management speak exclusively of air transport (and none on business models) but, that the texts are predominantly on this topic. Thus, from the total amount of 42 journals analyzed, 16 have excelled in the subject of air transport and 24 in business models. The other two journals addressed, in full, the two themes.

To analyse the relevance of the Journals to the subject, as said before, the most commonly used measure unity is the Journal Impact Factor. So, in order to do the analysis of relevance it was selected the journals with the highest number of references in the database, and then it was evaluated their impact factors.

The impact factor of some journals was not found. For them, the value plotted was zero. Although the Journal of Management Studies has not been a major source of scientific material in this study (only three, ie, less than 1%), it has the highest impact factor and this finding may be a good indicator that further research can be done in this source.

Another highlight is the journal *Technovation*, with a high impact factor, demonstrating that issues relating to innovation have gained attention in scientific research and it is also an issue much discussed in relation to business models. This finding points out to a good fit of the tree keywords chosen for the search.

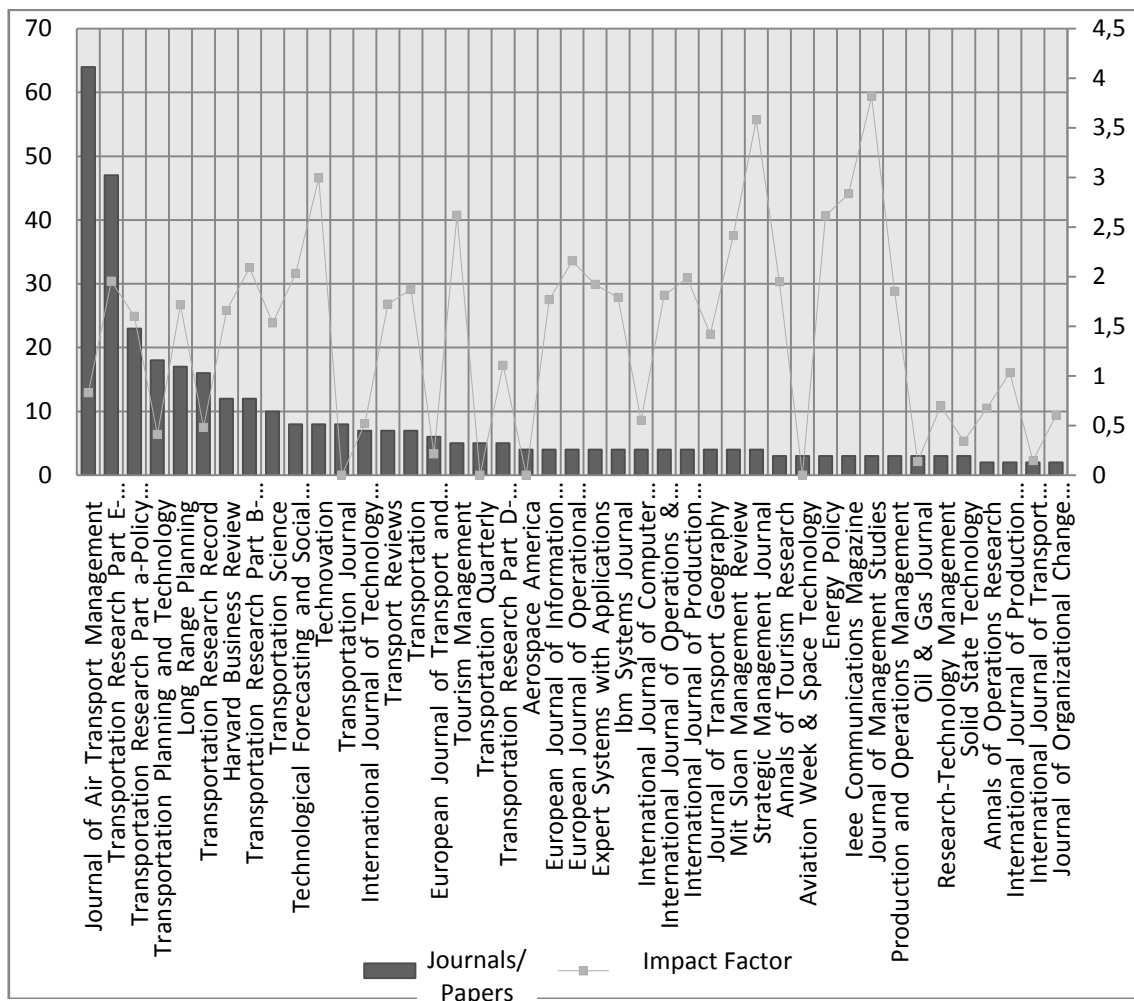


Chart 4 – Number of papers and Impact Factor

For most frequently journals it was noted the occurrence of high impact factors for both the subjects. This feature allows us to conclude favourably about the robustness of the references chosen to support the literature review in these subjects.

Analysis of Researchers

Unfortunately, despite it was forecasted the study of citations, the format built for the search and subsequent database formed not have compiled this information which prevented the completion of this assessment.

In order to overcome these difficulties it was retrieved the most significant authors constructed based on this work, as can be seen in the figure below. These authors represent the production of about 30% of the references contained in the database analyzed. It was taken into account authoring and co-authoring.

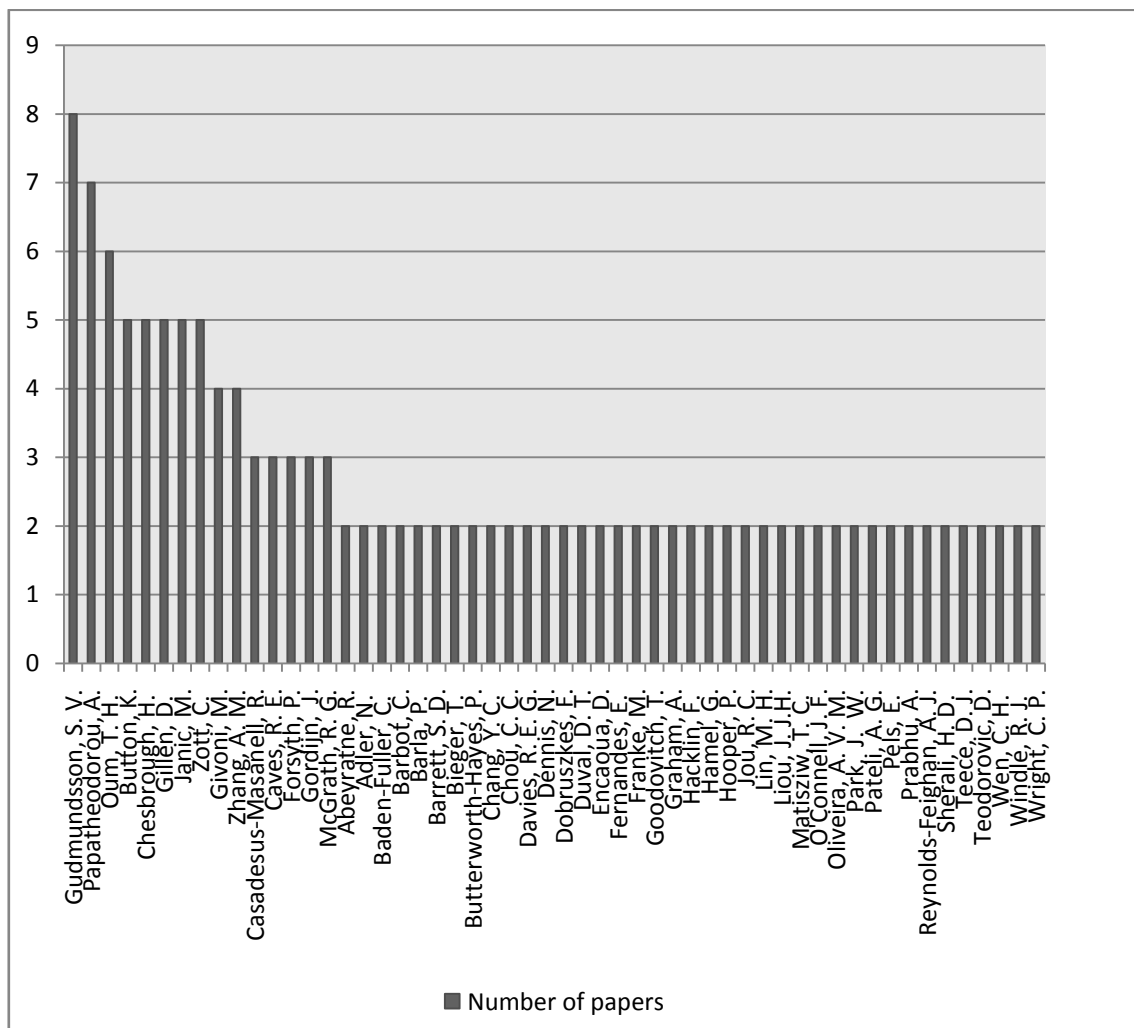


Chart 5 – Most important authors

The home countries of these researchers were identified making possible an analysis of the most important countries to the research in these subjects. It is important to emphasize that, for this analysis, it was considered only the first author of the article and its country of origin. Chart 6 shows the results.

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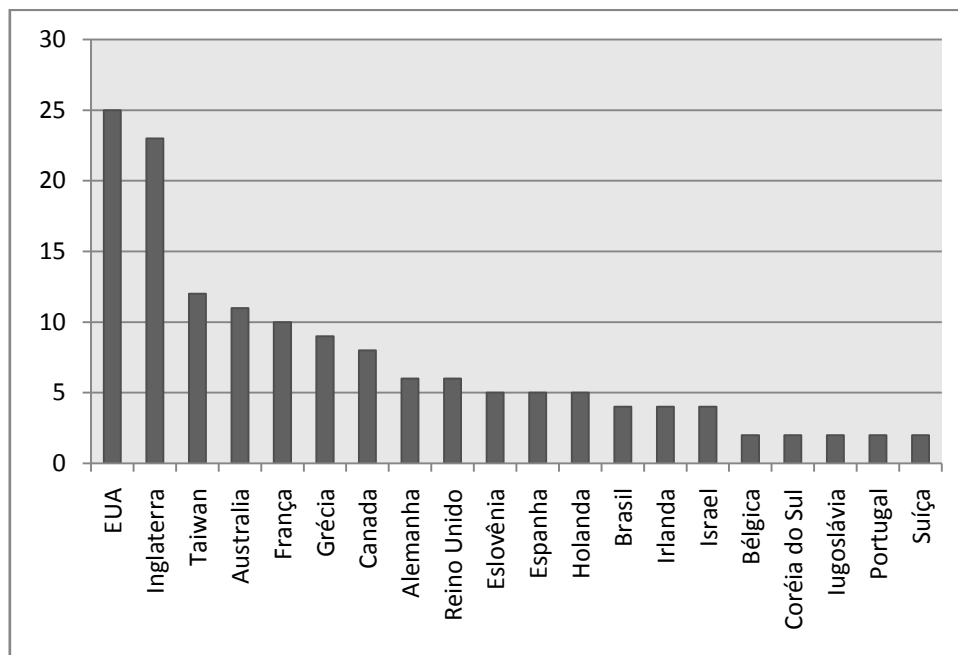


Chart 6 - Number of articles by country of origin of the main author

Ranked first, the United States contributes mainly with references regarding the topic of business models, and is followed by England and Taiwan. In the references discussed above, approximately 30% of the database, the first three countries together account for about 50% of publications. This means that all authors who have published on the topic addressed in this study, half are from the U.S., England and Taiwan. In this sample analysis Brazil contributed with four papers, an expressive result, which points out the increasing importance of both subjects in the country and also its setting as a relevant research actor.

FINAL CONSIDERATIONS

This paper proposes to undertake a bibliometric study on the topic of Air Transport and Business models in order to collaborate in the construction of the knowledge of academic production in these areas and their relationship. In this regard, the methodology built permitted the construction of a robust database composed by a total of 497 scientific articles, in addition to establishing some indicators that allow different analyzes on the collected material.

The analysis allowed the mapping of scientific production about the topic of Air Transport and Business Models, concluding that there has been a large increase in the number of publications in the past five years, and the trend is that this growth will continue, because these issues have been attracting the attention of several research centres.

The research also indicated that some countries have been highlighted in the training of researchers who have contributed to the number of publications on the subject. The

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countries that stood out were the United States, England and Taiwan. The U.S. contributed more often to the theme of Business Models while researches conducted in England and Taiwan have targeted the Air Transport theme.

We also observe a strong trend of increasing publication in Asian countries as well as Brazil, which reflects the current global industrial scenario and justifies the choice of the theme of this paper, since factors such as GDP growth and popularization of domestic and international air transport, among others, put Brazil on target of this discussion. So, all these surrounding conditions should be encouraging scientific research in order to create critical body within the national scene.

It is important to note that even having access to more information, the researcher still faces great difficulty in obtaining the data needed to perform a bibliometric research, mainly by lack of standardization of publications and absence of complete information that would allow comparison between different items. This difficulty is a factor limiting the quality of bibliometric analyzes and generated some impoverishment in the results presented in this paper.

In this context it is noted the deep need for technological advances in this area because even the software used to create the database in this research were proved unfriendly and somewhat limited in their resources. Thus, we must invest in research and development of new software to facilitate analyzes of this type.

It is also necessary to clarify the findings cited herein reflect the information in a database limited, which also express the characteristics of a given context and that in no way can be taken as a representation of all scholarship on the topic searched. Therefore, what is presented here is a snip of the features of a particular publication database (ISI Web of Knowledge). Likewise, although it has been attempted to avoid any partiality, it is known that analyzes also express some of the author's opinion and experience, especially with regard to step of pruning references of the initial database, which may cause a skew results.

As a suggestion to future works we proposed the increase in the current database extending the analysis to application of others bibliometric studies as Lotka's Law, Bradfords Law and Zipf's Law, deepening the awareness found here. Another proposal is comparing Brazilian publications to the others countries so as to evaluated the maturity level of our researches.

REFERENCES

ALAMDARI, F. F., S. Impact of the adherence to the original low-cost model on the profitability of low-cost airlines. **Transport Reviews**, v. 25, n. 3, p. 377-392, May 2005. ISSN 0144-1647. Disponível em: <<Go to ISI>://WOS:000228182100006 >.

The airline industry and the development of the business models: a study of their relationship and its implications. BERGIANTE, Níssia C.R.; SANTOS, Márcio P. de S., ESPÍRITO SANTO JR., Respício A.

- COSTA, J. G. D. Indicadores da produção científica e co-autoria: análise do departamento de ciências da informação da UFRGS. **Encontros Bibli: revista eletrônica de biblioteconomia e ciência da informação**, v. 17, n. 33, p. 18, 2012. Disponível em: < <http://www.periodicos.ufsc.br/index.php/eb/article/view/1518-2924.2012v17n33p97/21713>> >. Acesso em: 26 de fevereiro de 2012.
- FONSECA, E. N. D. Bibliografia Estatística e Bibliometria: Uma Reivindicação de Prioridades. **Ciência da Informação**, v. 2, n. 1, p. 2, 1973. Disponível em: < <http://revista.ibict.br/index.php/ciinf/article/view/1625>> >.
- GILLEN, D.; GADOS, A. Airlines within airlines: Assessing the vulnerabilities of mixing business models. **Research in Transportation Economics**, v. 24, n. 1, p. 25-35, 2008. ISSN 07398859.
- GRAF, L. Incompatibilities of the low-cost and network carrier business models within the same airline grouping. **Journal of Air Transport Management**, v. 11, n. 5, p. 313-327, Sep 2005. ISSN 0969-6997. Disponível em: < <Go to ISI>://WOS:000232082100003 > >.
- GUDMUNDSSON, S. V. Airline failure and distress prediction: a comparison of quantitative and qualitative models. **Transportation Research Part E-Logistics and Transportation Review**, v. 35, n. 3, p. 155-182, Sep 1999. ISSN 1366-5545. Disponível em: < <Go to ISI>://000081143300002 > >.
- HULME, E. W. **Statistical bibliography in relation to the growth of modern civilization : two lectures delivered in the University of Cambridge in May, 1922.** London, 1922. 76 Disponível em: < <http://www.archive.org/details/statisticalbibli00hulmuof>> >.
- IATA. Annual Report 2011 - International Air Transport Association. 2011. Disponível em: < <http://www.iata.org/pressroom/Documents/annual-report-2011.pdf>> >.
- MOTTA, O. M. Q., OSVALDO LUIS GONÇALVES; FARIAS FILHO, JOSÉ RODRIGUES DE Alinhando os objetivos técnicos do projeto às estratégias de negócio: contribuição da metodologia FEL no pré-planejamento de grandes empreendimentos. **Revista Gestão Industrial**, v. 7, n. 4, p. 18, 2011. ISSN 1808-0448. Disponível em: < <http://www.pg.cefetpr.br/depog/periodicos/index.php/revistagi/article/viewFile/827/761>> >.
- NAIR, S. K. S.; PALACIOS, M.; RUIZ, F. The Analysis of Airline Business Models in the Development of Possible Future Business Options. **World Journal of Management**, v. 3, n. 1, p. 11, 2011.
- OTLET, P. **Traité de documentation; le livre sur le livre; théorie et pratique.** Bruxelles: Editions Mundaneum, 1934. 451 Disponível em: < http://lib.ugent.be/fulltxt/handle/1854/5612/Traite_de_documentation_ocr.pdf> >.

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- PRITCHARD, A. Statistical bibliography or bibliometrics? **Journal of Documentation**, v. 25, n. 4, p. 2, 1969.
- SAMIEE, S. Knowledge structure in international marketing: a multi-method bibliometric analysis. **Journal of the Academy of Marketing Science**, SPRINGER, v. 40, n. 2, p. 364-386, 2012. ISSN 0092-0703.
- TAGUE-SUTCLIFFE, J. An introduction to informetrics. **Information Processing & Management**, v. 28, n. 1, p. 1-3, 1992. ISSN 0306-4573. Disponível em: < <http://www.sciencedirect.com/science/article/pii/030645739290087G> >.
- TEECE, D. J. Business Models, Business Strategy and Innovation. **Long Range Planning**, v. 43, n. 2-3, p. 172-194, 2010. ISSN 00246301.
- TRETHERWAY, M. W. Distortions of airline revenues: why the network airline business model is broken. **Journal of Air Transport Management**, v. 10, n. 1, p. 3-14, Jan 2004. ISSN 0969-6997. Disponível em: <<Go to ISI>://000188127500002 >.
- VANTI, N. A. P. Da bibliometria à webometria: uma exploração conceitual dos mecanismos utilizados para medir o registro da informação e a difusão do conhecimento. **Ciência da Informação**, v. 31, p. 369-379, 2002. ISSN 0100-1965. Disponível em: < http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-19652002000200016&nrm=iso >.
- WHITE, M. D. RefViz 2. **Libraries and the Academy**, v. 8, n. 3, p. 1, 2008.
- ZOTT, C. A., R. The fit between product market strategy and business model: Implications for firm performance. **Strategic Management Journal**, v. 29, n. 1, p. 1-26, Jan 2008. ISSN 0143-2095. Disponível em: < <Go to ISI>://WOS:000252110500001 >.