BUSINESS MODEL INNOVATION IN AIRLINES

[1]Bruno Alencar Pereira
[2]Mauro Caetano

ABSTRACT

The business models innovation in airlines can contribute to the creation of value, competitive advantage and profitability with new possibilities of action. The proposed paper aimed to identify the business models adopted by airlines and identify how the innovation occurs at these organizations. The methodology adopted is characterized as empirical, exploratory and descriptive research by multiple case study with three major Brazilian airlines. The results demonstrate that the search for paradigm breaks, related to the dichotomic traditional models of low-cost and full-service, toward hybrid business models occur linearly, as examples highlighted by companies, in which internal changes in business models are considered major organizational innovations.

Keywords: Air Transport; Airlines; Business Model; Innovation Management.

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[1] Master of Business Administration at the Federal University of Goiás (UFG) Goiás (Brazil).
General Coordinator of the Incubator Program by the State University of Goiás (UEG), Goiás (Brazil).
[bruno_alencar5@hotmail.com]

[2] Professor of the Administration Department of the Goias Federal University (UFG), Goias (Brazil).
PhD in Production Engineering at University of São Paulo (FEA/USP), São Paulo (Brazil).
[maurocaetano1912@gmail.com]

INOVAÇÃO EM MODELOS DE NEGÓCIOS EM COMPANHIAS ÁEREAS

RESUMO

Inovações em modelos de negócios em companhias aéreas podem contribuir para a criação de valor, vantagem competitiva e rentabilidade em novas possibilidades de atuação. O presente estudo se propõe a identificar os modelos de negócios adotados por companhias aéreas e identificar como a inovação ocorre nessas organizações. A metodologia adotada é caracterizada como pesquisa empírica, exploratória e descritiva, sendo utilizado o estudo de casos múltiplos com três das maiores companhias aéreas brasileiras. Os resultados demonstram que a busca pela quebra de paradigmas, relacionados ao modelo dicotômico tradicional de companhias low-cost e full-service, para um modelo híbrido ocorre linearmente, como os exemplos destacados pelas empresas, nas quais as mudanças internas nos modelos de negócios são consideradas as principais inovações organizacionais.

Palavras-chaves: Companhias Aéreas; Gestão da Inovação; Modelos de Negócios; Transporte Aéreo.

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INTRODUCTION

To define and display business models innovation in airlines, Carr (2015) indicates that the topography of the airline's map is relatively flat revealing a lack of innovation and the perception of innovation is focused on processes and services. For Raynor (2011), innovation in business models is related to a model that meets customer segments' needs where dominant firms deliver little value aligned to the implementation of technologies that allow eventually this business model is one valuable resource to please most segments.

Innovation and value proposition in the business models are related to the context of the use of complex systems made services to enhance existing offerings, create new offerings, and reconfigure their ecosystems, for example, acquisitions, divestitures and partnerships (Maglio; Spohrer, 2013).

According to Nicolau and Santa-María (2012), the air transportation has seen the recent collapse of new and traditional companies, with a new wave of mergers as well as micro and macro factors including bank credit restrictions, economic recession and volatile prices fuel.

The common sector challenges require the adoption of innovative business models as a solution to many obstacles, and exponentially disseminated because of organizational strategies, enabling the identification and definition of paths to follow and to enhance the capture and generation of value for consumers and the company. In this perspective, alongside the practical implications, there is the theoretical expansion of related studies in the literature (Pereira; Caetano, 2015).

According to Pereira and Caetano (2015), business models traditionally adopted by airlines are based on low-cost or full-service strategies being insufficient to answer the new market reality. New studies of business models adopted by airlines expand the low-cost and full-service dichotomy for models that permeate for hybrid models, such as the spectrum of the business model proposed by Lohmann and Koo (2013), which assumes that currently there is a continuity of different business models instead of a simple categorization of discrete groups.

This trend is also observed by strategy *Airlines-within-Airlines (AinA)*, investigated by Homsombat et al. (2014) as example of airline group that operate simultaneously with a full-service company and a low-cost carrier. Also as *Airlines-within-Airlines (AWAs)* model, investigated by Pearson and Merkert (2014) to identify that hybrid companies most successful have considerable autonomy, market dominance, decisive leadership and less deviation from the original low-cost model, unless the premium income that is sufficiently achieved.

In this context, exploring different aspects related to business models and identification of the main models used by domestic airlines, the proposed study aims to contribute to verify, by means of indicators, the innovation characteristics of the business models adopted by airlines to the pursuit of value creation, competitive advantage and profitability, using as empirical cases three of the major Brazilian airlines.

The surveyed Brazilian airlines stood out to be among the companies that have achieved greater participation in the national domestic market, in terms of the utilization rate of the seats Passenger Load Factor (PLF), which represents the demand/supply and Revenue Passenger Kilometer (RPK), jointly representing 62.46% of the domestic market (ANAC, 2015).

The study reports innovations in business models and subsequent delivery of value generated by these instruments related to the indicators, proposed as a major contribution of the paper. Indicators have been raised and grouped with its implications in the surveyed airlines by six different models in the literature. The model presented by Chen et al. (2011) is approached from the perspective of the relationship of co-production and innovation indicators targeted for new services, processes, modifications, service line extension and repositioning implemented both for business and customers.

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The model results of innovation impact is also used in the context of economic performance, as propositions of Evangelista et al. (2013).

In the case of indicators directed to the innovation of the business model, advanced customer segmentation and services and implementation of new technologies is used by Franke (2007). Whith the adopting of new ways of pricing the services and products offered, the indicators proposed by Hinterhuber and Liozu (2014) are raised. Focusing on activities aimed at organizational innovation are presented by OECD (2007) and the broader setting of innovation in business models presents the indicators or innovation components of business *Canvas* model, proposed by Osterwalder and Pigneur (2010).

Classifying innovation indicators proposed and their applications in business models adopted by the surveyed companies, as well the observation of the similarities and documents from the *National Civil Aviation Agency (ANAC)*, this study aims to characterize of possible innovations in the identified business models, culminating in proposing new forms of activity in this business.

INDICATORS AND THE COMPLEX REALITY OF THE DIFFERENT BUSINESS MODELS OF AIRLINES

Although broad definitions business models, Mason and Spring (2011) report that in the literature there is still a gap and questions about how the business models are created and put in practice, particularly by the absence of indicators that make it possible to verify the impact of innovation models adopted. Based on different perceptions of business models, is adopted as a concept the definition of business models as the mechanisms for seeking to create value, generating competitive advantage and profitability.

The complexity of the innovation within the domain of a company makes it necessary to consider information regarding numerous variables that may represent innovation (Kim, 2013). In the preparation of innovation indicators such constructs can provide a range of information on the process of innovation in the business sector, identifying the motives and obstacles to innovation, changes in the operation of

enterprises, the types of innovation activities in which it is operate and the types of innovations that they implement (OECD, 2007).

Carayannis and Grigoriadis (2014) reports the thought of many scholars who see innovation with features inherently impossible to quantify and measured primarily by its qualitative aspects. However, according to the authors, innovation, competitiveness and performance can be estimated taking into account that all these aggregated checks should be highly correlated with observation of several overlays. It can hinder the analysis of their relationship because there is no technical and universally accepted definition.

Therefore, when considering measures related to innovation in business models, indicators are necessary to explore the connection between different variables and provide a simple representation of the complex reality of different business models of airlines (Lohmann; Koo, 2013). However, according to Kim (2013), it is not easy to represent the involvement of a company with innovation, since innovation at the enterprise level is a complex black box, which can not be explained by any single common factor or small combination of these factors.

In this sense, different models with indicators were used in this study to suit specific aspects of the innovation in the business models of airlines, such as those proposed by Chen et al. (2011), Evangelista et al. (2013), Franke (2007), Hinterhuber and Liozu (2014), OECD (2007), Osterwalder and Pigneur (2010).

The model of the relationship co-production and innovation proposed by Chen et al. (2011) presents oriented indicators for collaborative processes with targeted customers and partners for innovation. The indicators selected are related to innovation in services that affect the business model. The model which impact the innovation on economic performance proposed by Evangelista et al. (2013), directed to verify the influence of innovation, was adopted to contain indicators that make possible to check the influence of innovation to reflect the

economic interdependencies between the actors involved.

Franke (2007) proposes the innovation impact model with targeted indicators for revenue, cost and quality, in which innovation in the airlines can be reached in three areas: new business models, advanced customer segmentation and services and through implementation of new technologies. Based on the model Franke (2007), three areas were adopted as part of a business model, in which the indicated drivers will be adopted as indicators of innovation in the sector.

The model indicators for roadmap of innovation in prices, presented by Hinterhuber and Liozu (2014), has been used to be primarily related to three key areas that the authors suggest as fundamental to approach any innovation in prices applied on strategy, tactics and organizational dimension. The indicators shown in the model assist executives in pricing practices. In addition to mapping the universe of innovations of the best pricing practices, the model proposed by Hinterhuber and Liozu (2014) can help executives to think about alternative approaches of business models related to pricing of products or services offered by airlines.

The OECD (2007) presents the model structure for measuring the innovation that has implicit indicators based on theories that highlight, among other things, the driving forces behind innovation, the relevance not only in products, services and processes, but also marketing and organizational practices, the role of linkages and diffusion and the view of innovation as a system. Based on this model, this study gave emphasis on organizational innovation and the implementation of a new method in business practices, workplace organization or external relations.

The business innovation model Canvas, proposed by Osterwalder and Pigneur (2010) and Osterwalder et al. (2005), a conceptual model, which through *design thinking* methodology, helps companies to take assertive decisions for development and business innovations, indicating nine blocks of indicators. This indicators are needed for the structuring and creation of value and innovation to the business, and can be decomposed into key partners, key activities, key activities, value proposition, customer relationships, channels, customer segments, cost structure and revenue streams. The Fig. 1 shows the models used with the application focus and their grouping of indicators.

Authors	Model	Focus	Grouping of indicators
Chen et al. (2011)	Relation of co-production and innovation	Innovation in services	Novelty for existing services in the market, new to the company's services, new delivery processes, service changes, the line extension services and repositioning services.
Evangelista et al. (2013)	Impact of innovation on economic performance	Impact of innovation on economic performance services	Participation of turnover due to enhancement or introducing new services or products, growth by the creation of added value, expenses with innovation and gross fixed capital formation for the aggregate value.
Franke (2007)	Innovations impact	Profitability and create competitive advantage	Innovation in business model, advanced customer segmentation and services and implementation of new technologies.
Hinterhuber and Liozu (2014)	Indicators for innovation roadmap in pricing	Innovation in price to generate competitive advantage	Pricing strategic, tactics and organizational.
OECD (2007)	Framework for measuring innovation	Directed activities for organizational innovations	Organizational innovations in business practices, new methods in the organization of work, new methods in the organization of external relations and acquisition of other external knowledge, specifically related training to organizational innovations and the

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			acquisition of machinery, equipment, other capital goods for new methods organizational.
Osterwalder and Pigneur (2010)	Innovation in business models *Canvas*	Innovation in business models for revenue generation	Customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partners and cost structure.

Fig. 1. Summary of models for innovation indicators on business models.
Source: research data.

Through the models proposed in Fig. 1, were identified 30 indicators used in the questions used as a reference for the development of the interview guide for further characterization of innovation in business models adopted by the airlines.

METHOD

The methodology consists of empirical, exploratory and descriptive research by multi case study (Yin, 2010). Whith this is allowed an investigation to raise significant and holistic characteristics of innovation indicators applied to business models adopted by the airlines. Each selected case predicts results obeying an order to identify the contribution of business models and innovation indicators on the performance of airlines, following a theoretical replication when comparing the innovation indicators proposed by the literature.

For selection of airlines were observed the Brazilian companies that stood out for being the leading companies in 2015 in terms of the utilization rate seats Passenger Load Factor (PLF), which represents the demand/supply, and Revenue Passenger Kilometer (RPK), with the exception of sector leading company not searched by the absence of consent. In terms of PLF and RPK, the three surveyed airlines together account for 62.46% of the domestic market in the accumulated period of 2015.

The selection of cases with interviews and documentary research allowed the triangulation for verification and chain of evidence on the business models and indicators adopted to the existing theory, providing a wide coverage, accuracy, discretion and stability before the collected data helping to get the inference of knowledge of the indicators used (Bardin, 2011). The basis documents used in documentary research were the Yearbook of Air Transport (ANAC, 2013) and Demand Offer and Air Transport (ANAC, 2015).

The indicators presented were used as basis indicators for the interview guide. Each indicator has been used for qualitative implications culminating in results, that made possible the verification and identification of innovative characteristics in the business models of airlines, being supported by documentary research. Once developed the survey instrument, it has been previously evaluated and revised to ensure that the questions and the instructions were clear and understandable. Subsequently, the script was applied by the researcher in person interviews and pre-scheduled with the leaders of the respective selected airlines, described in Fig. 2.

Company	The leading area of expertise	Initial year of admission to the company
A	Planning	2007
B	Planning	2013
C	Vice-Presidency	2010
	Planning	2011

Fig. 2. Selected leaders for the application of interview guide.
Source: research data.

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The leaders presented in Fig. 2 were selected for interviews for allegedly having the best systemic view of the company's activities and therefore able to answer questions about the strategies, operations and performance of the adopted business models (Brettel et al. 2012).

Interviews had individual average length of 45 minutes, recorded by audio, transcribed using transcription software and then analyzed, remaining in confidential the names of respondents and airlines.

The analysis of the data collected and analysis by manifest and latent contents were assisted with a qualitative research software as a tool for categorization, coding and linking of documents. The categories defined in Fig. 3 were created on the basis of a priori indicators subdivided into ten items, enabling the descriptive analysis exposed at results.

For categorizing, following indications proposed by Bardin (2011), the contents that were repeated too often comparable units were grouped into clusters for thematic analysis and coding units for recording information.

Category	Characteristic
1	Innovation by the novelty and value proposition
2	Innovation by delivering value and customer relations
3	Innovation for growth in the market and revenue stream
4	Innovation by cost structure and acquisition of fixed capital
5	Innovation for connectivity and customer segmentation
6	Innovation by decentralizing control and greater autonomy
7	Innovation through the implementation of new technologies
8	Innovation by pricing strategy
9	Innovation by organizational methods
10	Innovation by partnerships and external knowledge

Fig. 3. Categories created to characterize the innovation in business models.
Source: research data.

As exploratory technique to visualize patterns by similarities of contents was used cluster analysis, which according Guest and Mclellan (2013), produces an output based on the relationship between the codes that are applied to the raw data and the frequency with which they co-occur. To correlate the data in cluster analysis was performed using Pearson correlation coefficient for the clusters or threads of sources and through nodes. The parameters used for the Pearson correlation coefficient was 0.6, indicating a negative or positive strong correlation, as well as 0.3 to 0.6, indicating moderate correlation and 0 to 0.3, indicating weak correlation.

The treatment phase of results by inference and interpretation consists to capture the contents of all material collected, comparing by juxtaposing the existing categories, highlighting the aspects considered similar and those considered different (Silva; Fossa, 2013). This process allowed the internal validity and use of logical analysis model (Yin, 2010).

RESULTS

The Company A began operations 2001 and has a concession to operate their flights in Brazil until December 14, 2019. The Company B is from 2008 until November 28, 2018, and The Company C from 1998 until January 9, 2018 (ANAC, 2013).

In terms of current positioning in the market, regarding to PLF and RPK indices, in 2015 the Company A has a PLF of 78.50% and RPK 36.41%, Company B with PLF of 79.80% and RPK 17.01%, and Company C with PLF of 82.8% and RPK 9.04%, demonstrating the relevance and representativeness of these companies in the Brazilian air transport scenario. The identification of the business models adopted by the airlines is shown in Fig. 4.

Company	Identified business model	Characteristics
A	Hybrid based on LCC-FSC spectrum	Value proposition focused on the convenience of passengers, customer base with less purchasing power, flying high frequency, use of standardized aircraft and greater intensity in the use of aircraft and crews that permeate the low-cost characteristics, and at the same time the search new revenue streams flights to major airports, business-class service and improvement of operational work flows that permeate the full-service features.
B	Hybrid based on LCC-FSC spectrum	
C	Full-service	Provision of specific services, ticket sales with higher added value by contributing additional customer resources, customer base with higher purchasing power, amenities and services to different board aircraft with new embedded technologies, network focused on premium business passengers, mixed strategy hubs and spokes, flights from the main airports and business-class service.

Fig. 4. Airlines and adopted business models.
Source: research data.

According to Fig. 4, it is observed through triangulation of findings and based on the theoretical evidences the performances and value proposition fom the companies' business models.

The adoption of hybrid models by Company A and B are aligned to the LCC-FSC spectrum, proposed by Lohmann and Koo (2013), and the Company C adopt the full-service model as propositions of O'Connell and Williams (2005) and Franke (2007).

The Company A and B have flexible features at the same time focus on what is essential to the value proposition focused on convenience for the passenger. There are elimination of some benefits, such as free meals, to the example of Company A, it is possible to identify a high flight frequency, the use of standardized aircraft and high utilization characteristic of low-cost models.

Furthermore, it is possible to identify display features from full-service models such as the search for new revenue streams and to improve the work of operational flows (Lohmann; Koo, 2013).

The identification of Company C, with the adoption of the full-service model, is evidenced by route network with flights from the main airports and business class services characterized by O'Connell and Williams (2005) and by offering specific services,

ticket sales with higher value and the aggregate customer base with greater purchasing power. The perception of the leaders in the domestic market, the company is at the level of senior services, compatible with full-service companies, while not acting in Brazil with international operations or shows some differences, such as executive cabin.

There are other elements that differentiate full-service business model of the Company C, as specific products, such as dispatch procedures of baggage, implemented technology platforms, new aircraft with multiconectaded entertainment network, focused on premium business passengers, after sales products, focused on ease of corporate clients and strengthening the model, based on customer segmentation, acoording to Blocker and Flint (2007), Franke (2007), Osterwalder and Pigneur (2010) and Raynor (2011). In addition, the Company have mixed strategy route network with centralized hubs and spokes to aggregates new possibility of redial seats and contact systems in unforeseen situations.

With analysis of the collected data and the categorized content, encoded by the chain of evidence from the interviews, the ANAC documents and the selected indicators have been exposed descriptive analysis, consolidating the results commonly perceived in airlines clashing with the theoretical foundation for characterize innovation in

business models and performance in the sector. The Pearson correlation coefficients found by cluster analysis as evidence of the results are shown in Table 1.

Table 1 Pearson correlation coefficients and overall average of the grouped perceptions of airlines x indicators by category.

Groupings of perceptions Airlines x Category indicators grouped	Pearson correlation coefficient
1 (G. 1 x I. 1)	0.774348
2 (G. 2 x I. 2)	0.612228
3 (G. 3 x I. 3)	0.638968
4 (G. 4 x I. 4)	0.632879
5 (G. 5 x I. 5)	0.789798
6 (G. 6 x I. 6)	0.58286
7 (G. 7 x I. 7)	0.501292
8 (G. 8 x I. 8)	0.751791
9 (G. 9 x I. 9)	0.628137
10 (G. 10 x I. 10)	0.699386
General Average	0.661169

Source: research data.

According to Table 1, it is observed by Pearson correlation coefficient relevant results on the distance the grouped perceptions of airlines with the categorization indicators of innovation in business models.

Stand out the coefficients of the groups 1, 5 and 8, with values denoting consistency by seeking the introduction of new products and services that enhance the value proposition of their business models (Avlonitis et al., 2001; Chen et al., 2011; Osterwalder and Pigneur, 2010).

A clear customer segmentation and connectivity offered is identified (Franke, 2007; Blocker and Flint, 2007; Osterwalder and Pigneur, 2010), as well as strong attention aimed at strategies innovative pricing (Hinterhuber and Liozu, 2014).

In contrast, stand out groupings 6 and 7, with values denoting the low decentralization of control and autonomy in the operations of companies, as well as the incipient realignment of business models aligned with the implementation of new technologies, that while new to the company yet are similar in the air transportation.

By Category 1 of innovation - novelty and value proposition, the results show that the surveyed companies operate with business models focused on incremental innovation, and not pioneers of existing services and products for consumers and new organization's own services.

This increaser the proposal for internal and external value in their business models, with the identification of new services for the company, allowing the range of new markets and complement a product line proving the propositions of Avlonitis et al. (2001) and Chen et al. (2011).

In the case of Category 2 - delivering value and customer relations, the companies surveyed demonstrate its performance with business models focused on services, that demanded new delivery processes such as the implementation of new integrated systems, new software or websites and new self-service equipment.

With this, new services and products demanded new efforts of marketing in relation to existing products and services, moderately changing customer buying behavior, which does not effectively highlights the need for a change in the buying behavior customer the business models adopted (Avlonitis et al., 2001).

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In Category 3 - growth in the market and revenue stream, one reaches the observation that the surveyed companies operate with business models focused on achieving the highest percentage in marketshare, which in turn influences the achievement of profitability.

Revenue streams related to the adopted business models commonly relate to pricing decisions on revenue management affecting customer behavior. In order to maximize their revenue, airlines do their best to prevent customers buy the cheapest flight, checking the indications related to the business models of revenue flows (Osterwalder and Pigneur, 2010; Aslani et al., 2014).

With Category 4 - the innovation for costs and structure of purchase of fixed capital, it was observed that the companies direct their cost structures to acquire new aircraft, embedded technologies, self-service equipment, operational and management software and the acquisition of other external knowledge, as propositions of Evangelista et al. (2013) and OECD (2007), promoting organizational innovation in business practices.

Analyzing the Category 5 - the innovation for connectivity and customer segmentation, it is concluded that the companies surveyed has its business models focused on structuring the route networks, better efficiency and use of available seats and connections, repositioning platforms operating existing or introducing new platforms that led to a fragmented portfolio, allowing companies to improve service to the needs of specific customer segments demonstrating the innovation directions indicated by Franke (2007).

By Category 6 - the innovation by decentralizing control and greater autonomy, the results show that the surveyed companies operate with organizational flows, in a way, foresee solutions for decentralization of information and processes for the airline's operational optimization at airports.

However, most of the strategic and decision-making situations companies operate with centralized measures to prevent the chain of consequences that affect the operations at each end,

interfering with the autonomy proposal by Franke (2007), in contradiction, for the ADF (2005), the air transportation has its own set of circumstances that require certain centralization that distinguish it from other segments.

With observation data and information collected in Category 7 - the nnovation for implementing new technologies, it was concluded that the surveyed companies do not present changes in business models that denote direct relation with the use of new technologies, according Avlonitis et al. (2001), if easily understood by consumers can offer a significant advantage in the business model before before the competing companies.

In Category 8 - the innovation for the pricing strategy, the characterization found aligns with the realization that in structuring their targeted business models to meet a greater number of passengers, optimizing the occupation of aircraft and achieve profitability, airlines in fact observe the preferences of passengers that should be considered in the provision and pricing of services offered (ANAC, 2015).

Strategically, internal structures are observed in companies that enable the use of new pricing metrics aligned to base their own pricing policies and market intelligence.

Tactically, there was revenue management as standard practice in the surveyed airlines due to inherent characteristics of the sector, as well as the creative use of discounts that impact on pricing and consequently the business model. Organizationally, creative practices in pricing of products or services offered with evidenced existence of pricing teams were identified as one of the main sectors of each company, proving the proposed indications for Hinterhuber and Liozu (2014).

With observation of the results of the Category 9 - the innovation by organizational methods, it was identified that the companies work with business models that enable the acquisition of internal knowledge to the value proposition with organizational improvements such as the implementation of new practices to improve sharing

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learning and knowledge within the company by adopting new systems for document management and knowledge, being noticeable to establish databases with best practices, lessons and other knowledge so that they become more affordable confirming the propositions of OECD (2007), with the knowledge applied to the improvement of streams set by the business model.

Featuring innovation through external partnerships and knowledge related to Category 10, the results show that the surveyed companies operate with business models that focus on establishing new alliances and collaborations with other companies, and international alliances to search for new markets and suppliers technologies and aircraft.

In general, cluster analysis of by the grouping of perceptions of airlines in relation to the grouping of indicators show an average of 0.661169 for the Pearson correlation coefficient, indicating a positive correlation between perceptions and contents described the indicators.

Fig. 5 shows the main results and discussion, presenting similar characteristics or differences resulting from the described analysis, enabling a comparative overview of the main innovations perceived in airlines that impact the adopted business models.

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Category	Company A	Company B	Company C
1	Route network reorganization, reconfiguration of the internal aircraft design, flight anticipation for application and new brand.	Entertainment on board, use of smaller aircraft and service differentiation on board without adding extra cost.	New management platforms and channels, entertainment on board, mileage accrual with partners, and agility in the processes.
2	Flight experience and connectivity.	Digital platforms and onboard entertainment experience.	Attendance, use of mobile applications and procedures for automatic recognition of miles in partnership with other companies.
3	Corporate market and structuring route network with direct impact on the company's business model translated into revenue pot.	Corporate market and prospecting passengers with greater purchasing effort in the search for profitability.	Focus on the corporate market and improvement in revenue for complementary elements.
4	Flight experience, business intelligence, partnerships for greater performance and flexibility, and internal space of the aircraft.	Operating costs with the acquisition of aircraft to reduce excess weight and embedded technologies such as Live TV.	Fleet renewal, maintenance methodologies with predictive systems, restructuring costs and time, self-service and training.
5	Connectivity and customer segmentation, market dimensioning and definition of the value proposition offered.	New operational bases and destinations, different channels of distribution and segmentation to balance the seasonality.	Increasing the supplyoffer of flights diversification of corporate markets and adoption of mixed strategy of route network.
6	Focus on operational autonomy only in small bases that require local solutions.	Focus on operational autonomy at airports in less complex procedures to ensure a personalized response to customer.	Focus on the existence of operational control centers that make the decision and pass to airports and aircraft.
7	Check-in and control technologies for quick decisions, registration procedures, training and predictive software.	Innovations in mobile applications enhancing interaction and delivering value with improved usability as a new flying experience.	Security, website and new management platform, automated messages to procedures, and scales optimization.
8	Reducing complexity and predictability for price management, investment, international benchmarking and monitoring of consumer buying behavior.	Departments for specific pricing, Pricing responsible for pricing and Yeld Management responsible for analysis and decision-end pricing decision.	Board's participation in the pricing policy sectors such as Revenue Management and Revenue Management, and holding forums to analyze the specificities of the sector.
9	New training methods coming from international partners and improving the flow of operational and managerial and administrative proceedings.	Training with the creation of the Corporate University with modern structure for updated technical training.	Technical and operational improvement, dedicated team to implement call center, use of cross check controls, use of mystery shoppers, new management system, e-learning platform and business intelligence.
10	Partnership with companies to new models of business and route network structures for incremental revenue, collaborative openness to major corporate clients with open channel for understanding of their needs.	Partnership with suppliers to support operational and strong relationship marketing with partner companies to aggregate mutual revenue.	Partnerships to exchange knowledge, strategies and improvement of the features of the new management system, partnerships with aircraft suppliers for new products and easing the acquisition of aircraft and engines, and collaborative partnership with customers in mileage policy.

Fig. 5. Comparison by category and characteristic focus of innovation applied to business models.
Source: research data.

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It is observed in Fig. 5 the positioning of the airlines with the analyzed issues about the performance of their business models.

The Company A position its value proposition to new route network structures, performance improvement and flexibility of aircraft, business intelligence, new methods for pricing and training, collaborative partnerships and new brand in line with the repositioning of the company focused on the experience of flight and connectivity to passengers.

The value proposition presented by Company B directs its business model to benefit passengers related to the way of interaction and delivering value through different channels, flying experience with entertainment on board and greater connectivity of the route network.

The Company C positioning the value proposition of its business model for the differentiation of services and aircraft used by the passengers and in-flight entertainment systems, frequent flyer program in partnership with different segments, renewal of the aircraft fleet, restructuring costs with new self-service structures, reducing the time of operations, expanding the supply of flights diversification of corporate markets and focus on partnerships to exchange knowledge and action strategies for prospecting for new passengers.

It is noted similar directions in the airline business models in areas such as customer segmentation targeted at the corporate market, implementation of technologies, use of innovative practices in pricing policy and route network restructuring enabling greater connectivity (O'Connell; Williams, 2005; Franke, 2007; Lohmann; Koo, 2013).

CONCLUSION

The exploratory and descriptive sense conducted in this multi case study allows the investigation and survey of significant and holistic characteristics of innovations in the airt transport sector that impact the business models adopted by airlines. The results make possible the understanding of the use of these mechanisms by companies and their innovation profiles with the contribution of indicators grouped and implications described and their innovations that

enhance the creation of value, competitive advantage and profitability.

Based on the main business models adopted by airlines, it is perceived the break paradigms related to traditional models low-cost and full-service toward hybrid business models. The need for a business model that maintains a balance between the services offered was perceived, however, no major innovations identified by the supplied value proposition.

In this sense, it is concluded that the business models adopted by airlines A and B expand low-cost or full-service dichotomy for models that permeate by hybrid models based on the business model spectrum, offering certain own conveniences of low-cost model and certain aggregations of related value to full-service models. Except when targeting to a hybrid model, it is noted that the Company C is identified with the full-service business model which, although not purely presenting all the characteristics of a premium company, it became clear the company's position and the provision of specific services to a customer base with higher purchasing power.

Featuring innovations that impact the business modeling applied to the air transportation, it is concluded that the Brazilian companies its occurrence is linear, indicating that, in fact, the topography of the airline's map is relatively flat and that the perception of innovation is focused on processes and services as examples highlighted by the companies.

Linearity presented does not characterized in all such companies are not innovative in their business models, because even if internal to the organization, the changes taking place that change the operational flow, technological and market performance line up with innovations and that even moderately affect the value proposition of their business models.

The results show that airlines seek to innovate their business models linearly as the competitors, which the perception of their internal change leaders in business models are considered major organizational innovations. However, it is not evident in the results large external innovations for the

business models adopted in a comparative panorama of such companies.

This study allowed a breakthrough and contribution on the airlines operates and innovates in their business models to deliver value to the customer. The identification of the indicators used provides a better qualitative understanding of how innovation can influence business modeling, helping to reduce the gap and existing questions about innovation in business models in the sector.

The value proposition for business models demands new agendas for future research that can address the perception of value generated in the view of consumers, a segment which has not been researched in this study.

Although the perception of the companies themselves are notoriously identifying recurring revenues aggregate in business models revenue stream, measurement and metrics related to these values would provide improved accuracy of the evidence of the facts observed.

Therefore, it is indicated in new studies the use of quantitative methods for more precise basis of the results, as well as to measure the intensity of innovation in business models of airlines through quantitative indicators.

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