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A conceptual business model framework applied to air transport

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ABSTRACT

The adoption of business models in different sectors has been disseminated exponentially as a result of organizational strategies, allowing the identification and definition of paths to be followed, and enhancing capture and value creation for consumers and the enterprise. In the case of the air transport sector, specifically the airlines, the proposition of new business models can contribute to creating competitive advantage. This study develops a conceptual business model framework applied to air transport, which prioritizes key components identified in the literature for designing business models for airlines. With the exploration of different aspects of business models and the identification of the main models used by airlines, the results demonstrate the need for the adoption of new models in this sector.

1. Introduction

In the search for competitive advantage, airlines should consider the need to capture and deliver value to passengers along with the creation of internal value. According to Teece (2010), this can be obtained with the adoption of business models oriented towards competitiveness. These models refer to strategies, activities and performances that a company uses to generate internal and external value to obtain this competitive advantage.

Business models traditionally adopted by airlines, based on the strategies of low-cost or full-service, are insufficient to relate to the new market reality. Gassmann et al. (2014) argue that the recent approach to competition has been based on business models seeing opportunities for innovation and differentiation. Before then, companies from different sectors directed their efforts towards developing innovative products and technologies, but these could be inadequate if they did not have a business model that followed the changing environment.

The search for new ways to operate an airline in the market and deliver value to customers is identified in the study of O'Connell and Williams (2005), which shows this trend and the need for the adoption of new business models in the sector, relating this to key components that must be considered. This trend is also supported by Franke (2007) and Daft and Albers (2013).

Based on the synthesis of the key components identified in the existing literature regarding current conceptualizations of business models, a framework is proposed related to four business model strategies: creating and capturing value, market and advantages of anticipation, hybrid strategy and revenue generation. From the business models identified between the years 2005 and 2014, seven models were selected which were proposed by different authors. These models feature 38 key components. These key components are compared and a conceptual framework is developed to create business models applied to airlines.

2. Business models and air transport

The generation of competitive advantage with the use of new business models can be identified in studies such as those proposed by Achtenhagen et al. (2013) and Markides and Sosa (2013). These advantages can also be observed by the functionality of the business models highlighted by Chesbrough (2010), and the contribution of these instruments discussed by Casadesus-Masanell and Ricart (2010) and Teece (2010), demonstrating the ability of business models to maximize the value creation for companies and their application in different sectors.

Through a longitudinal study of 25 small and medium-sized firms (SMEs), Achtenhagen et al. (2013) identify micro-aspects of successful business model change. The authors conclude that the business model of change is essential for success, allowing companies to adapt to changes in the market and a competitive environment, while at the same time leveraging and building their internal organizations.

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Markides and Sosa (2013) illustrate the competitive advantage gained by airlines entrants or disruptors with new business models in markets created by pioneering companies (such as low-cost, no-frills flying), in which the introduction of a new business model has eroded the advantages of pioneer airlines. According to the authors, new business models of entrant airlines have the potential to erode the sustainability of established companies, regardless of where they operate.

An example of successful business model innovation is Southwest Airlines at the time that it became a new entrant, when the founder surmised that most customers wanted direct flights, low costs, reliability and good customer service, but did not need ‘frills’. Aircraft were standardized, allowing greater efficiency and operating flexibility. Southwest's business model was quite distinct from those of the existing major airlines (Teece, 2010).

With the expansion of business models, different concepts have been identified, as proposed by Casadesus-Masanell and Ricart (2010), who summarize the concept of business models as a reflection of the strategy held by the company and extend this concept to the perspective of scholars in a strategy defined as business logic, how it works and creates value for its stakeholders. In this context, it is noteworthy that the business model is not a strategy as proposed by Shafer et al. (2005), but a tool for analysis and reporting of organizational strategies, contributing to the understanding, analysis and communication of possibilities related to defined projects. Meanwhile, Gassmann et al. (2014) summarize the understanding of the business model in four dimensions: Who, What, How and the Value. The synthesis of the concept seeks to provide a clear schema of business model architecture.

The development of a business model involves a process of structuring business activities through flows, and strategic planning of internal and external company resources. DaSilva and Trkman (2013) describe the process of modeling business as the way businesses conduct their operations through graphical representations of activities, events and control flow, allowing the systematic structuring of the company's activities.

A systematic mapping of operations and principal activities in a company helps identify the features of a business model. Chesbrough (2010) argues that a business model enables the company to identify the value proposition, the market segment, the mechanism for generating revenue, the value chain, the cost structure and profit, and sets the competitive strategy whereby the company will gain and maintain advantage over competitors.

The functionalities of the highlighted business models demonstrate the ability of these instruments to enhance the generation of competitive value to business, with the possibility of application in different sectors. Based on these discussed concepts, the business models in this study are adopted as tools for value creation, exploring opportunities and generating competitive advantage. Their applicability to the air transport sector is identified and the results are a conceptual framework of business models for airlines.

Numerous challenges faced by enterprises require the need to seek new ways to reach profitability, value creation and market share. In this context, innovations in business models can be closely linked to a new perspective for the company, with the critical factor related to their suitability to cope with the dynamics of the market and to meet the expectations of its customers. For a better understanding of the business models applied in air transport, the main models used by airlines and the consequent need to search for new business models in the sector are exposed.

The main business models adopted by airlines are traditionally based on low-cost or full-service strategies. Models based on low-cost strategies are characterized by creating value by focusing on what is essential to the value proposition for the passenger. The cost savings are shared with the client and usually result in a

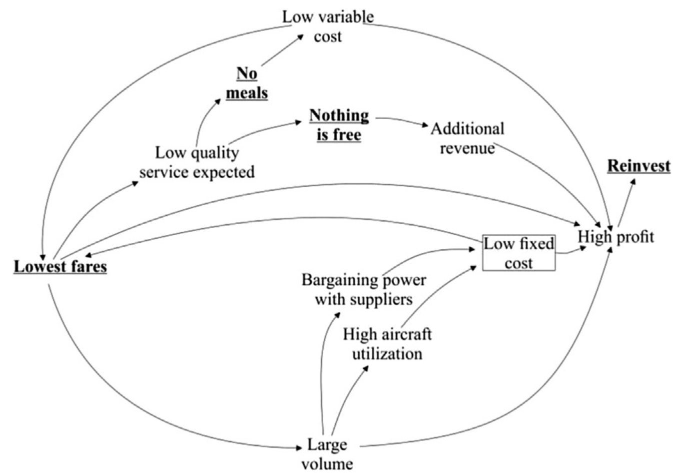

Fig. 1. Simplified representation of the Ryanair business model.
Source: Casadesus-Masanell and Ricart (2010).

customer base with less purchasing power (Gassmann et al., 2014). Companies which have adopted this model can be identified as JetBlue Airways, Ryanair, Southwest Airlines, Virgin Blue, Air Asia and EasyJet (Franke, 2007).

Graphical representation of the activities, events and flows of an airline with a business model based on low-cost strategy can be identified in Fig. 1.

The model presented in Fig. 1, based on the low-cost strategy adopted by Ryanair, which in the 1990s was undergoing financial difficulties, demonstrates the company's plan to radically transform the standard model based on full-service strategy into a new model based on low-cost, resulting in success for the organization (Casadesus-Masanell and Ricart, 2010).

Models based on full-service strategy are characterized by offering specific services such as transfers, flights to major airports, business class service, and frequent-flyer programs, among others (O'Connell and Williams, 2005). The tickets are sold with higher added value, which is passed onto consumers and usually results in a customer base with greater purchasing power. Airlines which have adopted this model can be identified as Singapore Airlines, Lufthansa, Malaysia Airlines, British Airways and Cathay Pacific (Franke, 2007). Graphical representation of the activities, events, and flows of an airline with a business model based on full-service strategy can be identified in Fig. 2.

According to Fig. 2 concerning the full-service strategy adopted by Lufthansa, it is noted that the company has evolved successfully as a global company, repositioning its model as an aviation group with a focus on passengers and supported by other business-operating segments as service providers of the company in a network strategy. The main objective of Lufthansa has been profitable growth in the long term, in which efforts have been oriented to strengthen and expand the leading position of the company and its partners in Europe (Jaracha et al., 2009).

A comparison between the past operating profit margins of these two kinds of business strategies is presented in Fig. 3.

Even with the success of low-cost companies, demonstrated by the profitability achieved in the period 1995–2005 in Fig. 3, a paradigm emerges because these companies do not suit the demands for full-services. As a solution to this paradigm toward a hybrid business model, Franke (2007) indicates that the company offering more specialized services with reduced prices stimulates additional demand with the updated service not at the primary level in this sector. However, customer satisfaction must be

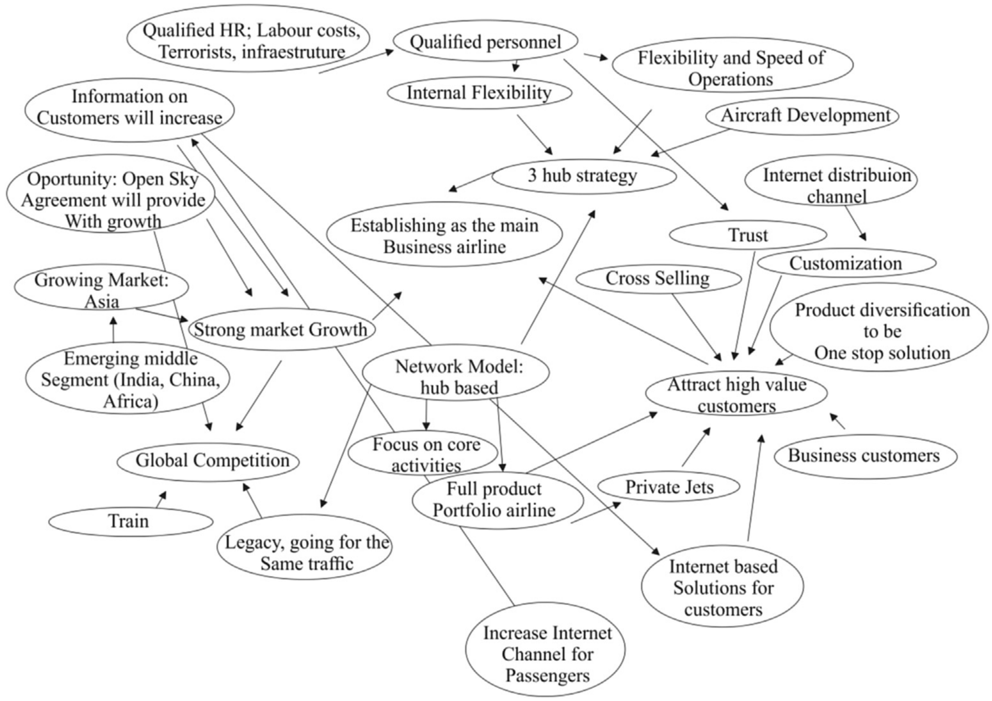

Fig. 2. Representation of Lufthansa's business model.
Source: adapted from Jaracha et al. (2009).

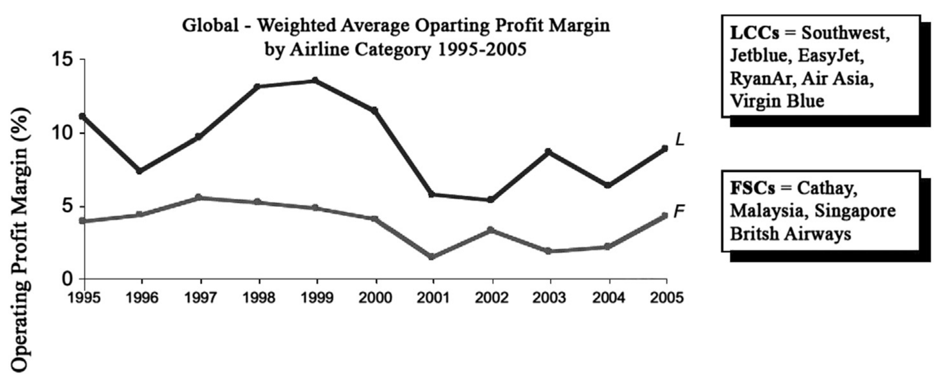

Fig. 3. Global-weighted average operating profit margin by airline category 1995–2005.
Source: adapted from Franke (2007).

answered. Therefore, the need for a business model that maintains a balance between the services offered is observed. In this sense, Daft and Albers (2013) identify some airlines, such as EasyJet and Air Berlin, which are adopting hybrid models to become more efficient and differentiated.

To demonstrate the relevance of adopting new models, Casadesus-Masanell and Ricart (2010) argue that firms that innovate in their business models compete differently. Achtenhagen et al. (2013) also argue that changes in the business model are essential for success, because they create value, opportunities and reduce the risk of inaction when a company stays with the same model that has been successful so far.

With airlines, the pioneering use of new business models enables the sustainability advantage of anticipation, as the First-Mover Advance (FMA), proposed by Markides and Sosa (2013). The implementation of a successful business model can position an airline in front of the competition with a well-defined model that allows adding value from innovations performed (Markides and Sosa, 2013; Teece, 2010).

To discuss innovative business models in airlines, this study identifies key components which can be observed for the creation of an innovative business model based on Gassmann et al. (2014), Mason and Spring (2011), Markides and Geroski (2005), Osterwalder (2005), Daft and Albers (2013), Lohmann and Koo (2013) and O'Connell and Williams (2005).

3. The key components of the business model

The 38 key components related in this study, representing strategic elements that must be observed by airlines in developing their business models for value creation, exploring opportunities and generating competitive advantage, were obtained from the business models proposed by different authors mentioned in the previous section.

From the identification of 55 different patterns of business models used by 250 companies, Gassmann et al. (2014) present a

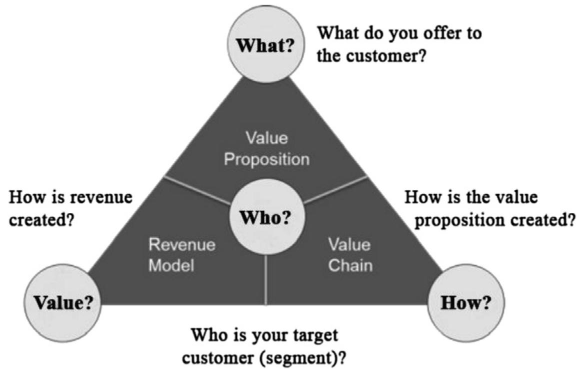

Fig. 4. Definition of business model.
Source: Gassmann et al. (2014).

generic model, shown in Fig. 4, divided into four dimensions, Who, What, How and the Value, which must be observed when defining new business models.

The key components of the triangle proposed by Gassmann et al. (2014) consist of identifying and defining target customers in the dimension Who, the description of value proposition offered to customers in the dimension What, the knowledge of how value is created across the value chain in the dimension How, and the definition of revenue generation in the dimension Value.

The elements obtained by Gassmann et al. (2014) arise from four central dimensions employed from the gap in common opinion-forming components of business models. With the first dimension, the target customer is identified as a central element in designing a new business model. With the second dimension, there is a value proposition defined by an integral vision of the set of products and services of a company that delivers value to the customer. The third dimension identifies the construction and distribution of related processes and activities along with the resources and capabilities involved and the internal value chain of the enterprise. Finally, the fourth dimension explains why the business model is financially viable and relates to the revenue model.

With a focus on sustainability in the market and the advantage of anticipation, Mason and Spring (2011) demonstrate how business models are created. Their evolution can be considered with the identification of the key elements of a business model: technology, which refers to the integration of technology with the product/service/process (Caetano et al., 2012), market offering, which refers to the services and products currently offered to consumers, and the network architecture, which refers to the configuration of the network of buyers and suppliers that enable commercial activity (Fig. 5). The elements proposed by Mason and Spring (2011) have origins in management practices for which the authors have drawn parallels between the theory and examples of the record industry.

Similar to Fig. 5, Markides and Geroski (2005) propose a business model with emphasis on the market and exploiting the advantages of anticipation, demonstrating components such as the consumers, the relationship with customers, distribution channels, partnerships, resources and protectionism indicating protection market by exploiting the advantages of anticipation. The origin of the elements identified by Markides and Geroski (2005) is based on entering and conquering the market as a by-product of an innovative business model, in which a lot of actions lead companies to come out as a niche in search of domination in a mass market.

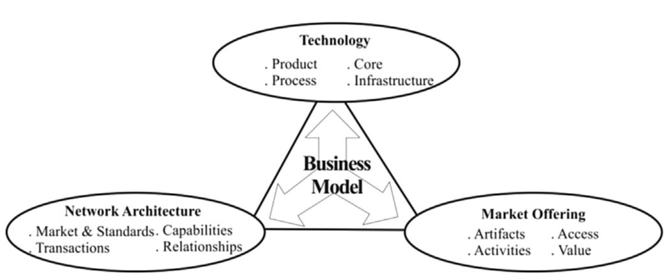

Fig. 5. Elements of the business model.
Source: Mason and Spring (2011).

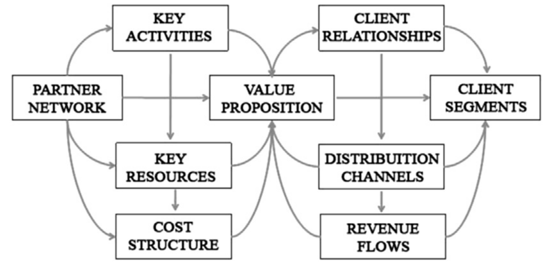

Fig. 6. Business model Canvas.
Source: Osterwalder (2005).

Identifying factors and resources of airlines that may be related to a business model, O'Connell and Williams (2005) identify the customer's characteristics, journey purpose, booking methods, fares, connecting traffic, carrier choice criteria, and types of trips undertaken. The key components highlighted by the authors are the result of a multi-case-study on the perception of passenger airlines with low-cost carriers and full-service carriers selected in Asia and Europe, among them being Ryanair, Aer Lingus, Air Asia, and Malaysia Airlines.

With a focus on revenue generation, Osterwalder (2005) proposes a decomposition of the business model into nine blocks, called Canvas, with key components for generating innovative business models, composed by key activities of the company, client relationships, partner network, value proposition, client segments, key resources, distribution channels, cost structure and revenue flows, as shown in Fig. 6.

Based on an extensive background in literature and empirical research, Osterwalder (2005) defines the nine elements as a simplified and representative description of a complex real-world object, being especially useful for strategic analysis in competitive business environments.

Directed to a system of value creation for airlines, Daft and Albers (2013) develop a framework for measuring a summary of the strategic sector studies identifying the dimensions and variables of the business models of five German airlines. Among the components that differentiate business models in the proposed framework are the corporate core logics in strategic level, the configuration of the value chain activities in structural level, and the assets of an enterprise in resources level. The key components identified by Daft and Albers (2013) originate from a conceptual framework developed by the authors to measure the convergence of an airline's business model, whereby the three main components describe the system of value creation based on the existing literature on the synthesis of strategic management and current conceptualizations of the business model.

Returning to the topic of business models oriented towards low-cost and full-service, Lohmann and Koo (2013) propose the spectrum of the business model, shown in Table 1, to identify the variation between models for nine U.S. airlines. To compare the models, six indexes are adopted, which can be characterized as key components for creating a business model: revenue, connectivity, convenience, comfort, aircraft and labor.

Table 1
Average benchmarked values for the six indices (2008–2009) – airlines listed in order according to the average index.

Index	Air Tran	Southwest	Jetblue	Skywest	Hawaiian	Alaska	Continental	American	Delta	St dev
Revenue	0.19	0.32	0.26	0.46	0.50	0.61	0.66	0.67	0.83	0.21
Connectivity	0.27	0.47	0.47	0.56	0.61	0.48	0.53	0.66	0.72	0.13
Convenience	0.70	0.58	0.83	0.27	0.35	0.40	0.61	0.61	0.41	0.18
Comfort	0.31	0.56	0.40	0.65	0.21	0.71	0.57	0.56	0.54	0.16
Aircraft	0.37	0.23	0.24	0.59	0.60	0.41	0.51	0.79	0.73	0.20
Labor	0.14	0.36	0.38	0.17	0.54	0.55	0.79	0.83	0.71	0.25
St Deviation	0.198	0.140	0.216	0.191	0.158	0.119	0.102	0.105	0.151	
Average	0.33	0.42	0.43	0.45	0.47	0.53	0.63	0.65	0.66	

Source: Lohmann and Koo (2013).

In Table 1, the variation of the ratio obtained by the model adopted by the respective companies, starts from the left with companies using business models based on low-cost strategy carriers (LCC), and to the right are companies that use models based on strategy full-service carriers (FSC). The six indices used by the authors summarize 20 items discussed in their study. The analytical framework of the research was partially designed using the Product and Organizational Architecture (POA) of companies used by Mason and Morrison (2008). The indices together were assumed to explain the position of the airlines within the business model spectrum shown in Table 1.

The similarities observed as points of attention for the development of a business model for airlines are presented in Table 2, which shows that the key components such as customer value proposition, value chain, resources, and partnerships are often cited by the authors.

These similarities demonstrate the need to adopt business models that require targeted efforts for the needs of the consumers, the creation of internal and external value, the strategic planning of the existing resources and openness to partnerships. Similarities are also observed in the item related to business model strategy, which identifies the tendency for key components that enable the development of business models targeted for value creation, exploitation of the advantages of anticipating, and focused on a hybrid strategy for airlines.

Table 2
Synthesis of key components to the business model for airlines.

Author	Key components	Business model strategy
Daft and Albers (2013)	Corporate core logics, value chain and assets.	Focus on value creation system.
Gassmann et al. (2014)	Target customer, value proposition, value chain and revenue generation.	Focus on creating and capturing value for the company and its stakeholders.
Lohmann and Koo (2013)	Revenue, connectivity, convenience, comfort, aircraft and labor.	Focus on hybrid strategy for airlines.
Markides and Geroski (2005)	Consumers, relationship with customers, distribution channels, partnerships, resources and protectionism.	Focus on the market and exploiting the advantages of anticipation.
Mason and Spring (2011)	Technology, market offering and network architecture.	Focus on the market and sustainability advantages of anticipation.
O'Connell and Williams (2005)	Customer characteristics, journey purpose, booking methods, fares, connecting traffic, carrier choice criteria and types of trips undertaken.	Focus on hybrid strategy for airlines.
Osterwalder (2005)	Key activities, client relationships, partner network, value proposition, client segments, key resources, distribution channels, cost structure and revenue flows.	Focus on revenue generation.

4. The conceptual framework

The conceptual framework demonstrated in Table 3 was developed using the 38 key components identified in the literature on current conceptualizations of business models. The proposed structure is developed by comparing the key components related to the strategy of four business models: the creation and capture of value, the market and the advantages of anticipation, hybrid strategy, and revenue generation. A total of 37 key components were selected to develop a parametric basis for creating the proposed conceptual structure. The key-component *value chain* occurs twice in the same business model strategy oriented to creating and capturing value. Therefore, this explains the use of 37 key components of the 38 identified.

The business model strategy focused on creating and capturing value uses six key components proposed by Gassmann et al. (2014) and Daft and Albers (2013), as shown in Fig. 7.

The focus most commonly attributed to the business model shown in Fig. 7 is concerned with explaining how the firm creates and captures value for itself and its various stakeholders within the ecosystem (Gassmann et al., 2014). As a result, the final business model framework is based on key components that fully describe an airline's value creation system (Daft and Albers, 2013).

In the business model strategy focused on market and anticipation advantages, nine key components are used which were proposed by Mason and Spring (2011), Markides and Geroski (2005), as shown in Fig. 8.

According to Mason and Spring (2011), the business model explored in Fig. 8 shows how a model can be created and processed by components involving key stakeholders of the business network, contributing to the structuring of the airlines in the markets in which they operate. Integrated with key components identified by Markides and Geroski (2005), this model is related to the actions that successful airlines can take to consolidate the market sooner. The relevant point to note is that to serve the market is not a matter of luck or good intentions, but the use of an innovative business model as the differential for this achievement (Markides and Sosa, 2013).

Table 3
The conceptual framework of business models for airlines.

Business model strategy	Creating and capturing value	Market and advantages of anticipation	Hybrid strategy	Revenue generation
Key components	Target customer	Technology	Customers characteristics	Key activities
	Value proposition	Market offering	Journey purpose	Client relationships
	Value chain	Network architecture	Booking methods	Partner network
	Revenue generation	Consumers	Fares	Value proposition
	Corporate core logics	Relationship with customers	Connecting traffic	Client segments
	Assets	Distribution channels	Carrier choice criteria	key resources
	–	Partnerships	Types of trips undertaken	Distribution channels
	–	Resources	Revenue	Cost structure
	–	Protectionism	Connectivity	Revenue flows
	–	–	Convenience	–
	–	–	Comfort	–
	–	–	Aircraft	–
	–	–	Labor	–

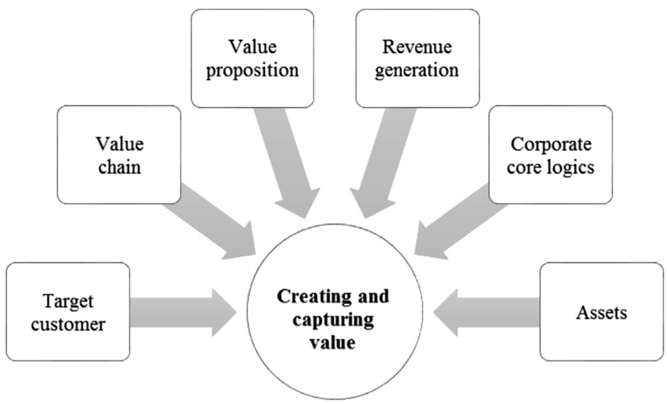

Fig. 7. Business model of the airline based on creating and capturing value.

In the business model strategy focused on the hybrid strategy, thirteen key components are used which are proposed by O'Connell and Williams (2005), Lohmann and Koo (2013), as shown in Fig. 9.

The key components are highlighted by O'Connell and Williams (2005), which include the traffic model realized and the performance of operational cost. The integration with the key components identified by Lohmann and Koo (2013) results in the model shown in Fig. 9, which provides a useful tool for airline managers and policymakers related to the concept of hybrid airlines and shows how these business models can be compared with low-cost and full-service carriers.

In the business model strategy focused on revenue generation, nine key components are used proposed by Osterwalder (2005), as shown in Fig. 10.

5. Conclusions

The framework presented and the key components identified may contribute to the development of new business models to be adopted by airlines, although there is the need to observe the specific features of the sector and to identify appropriate components for each strategy and company. The implementation of such innovative business models enable a new positioning of airlines in their relations marketplace, strategies, and value proposition. However, the search for a new model requires the perception of coexistence between the current models and the new ones.

The paper takes a theoretical approach, and therefore requires future consideration of the practical implications. There is the need for an empirical application and validation related to the four business models developed from the conceptual framework. The study contributes to a broad area for future research directed towards the identification, development and innovation for airlines business models focusing on creating and capturing value, market and anticipation advantages, hybrid strategy and revenue generation. The limitation is related to the lack of studies with the same goal of proposing innovative business models in the sector with different strategic focuses. The exploratory nature of this research is limited by the existing literature and comparison with key components identified in other studies.

The effectiveness of the business models applied to air transport

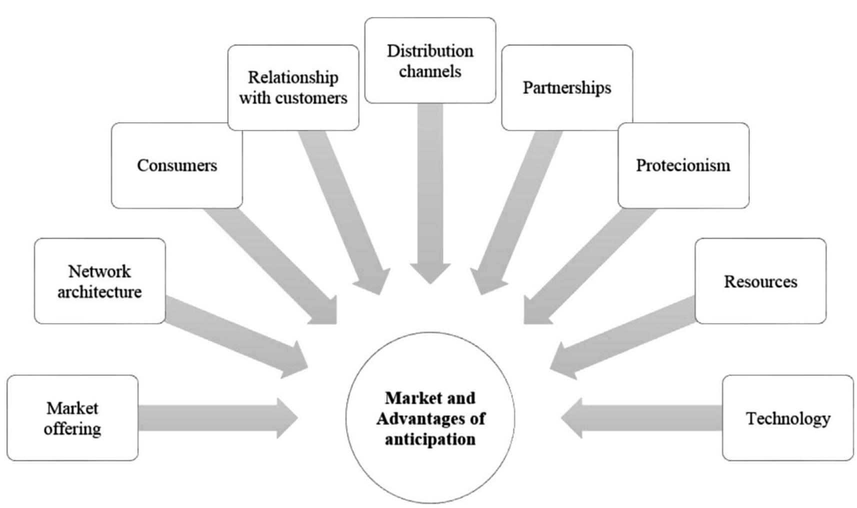

Fig. 8. Business model of the airline based on market and anticipation advantages.

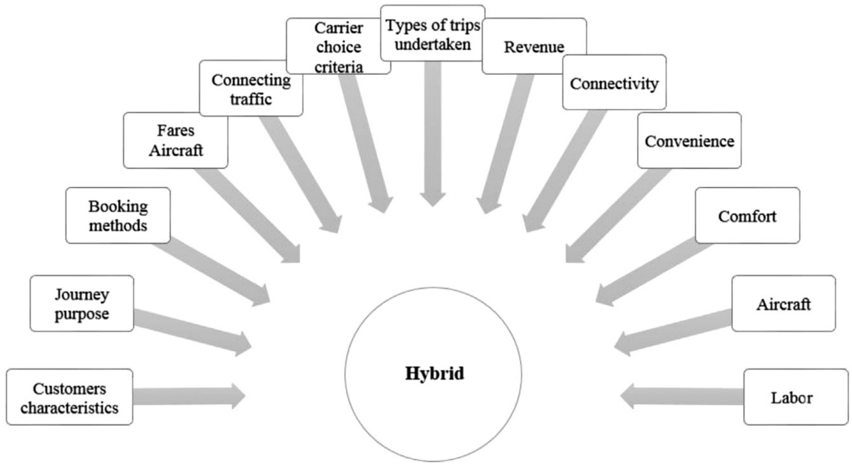

Fig. 9. Business model of the airline based on the hybrid strategy.

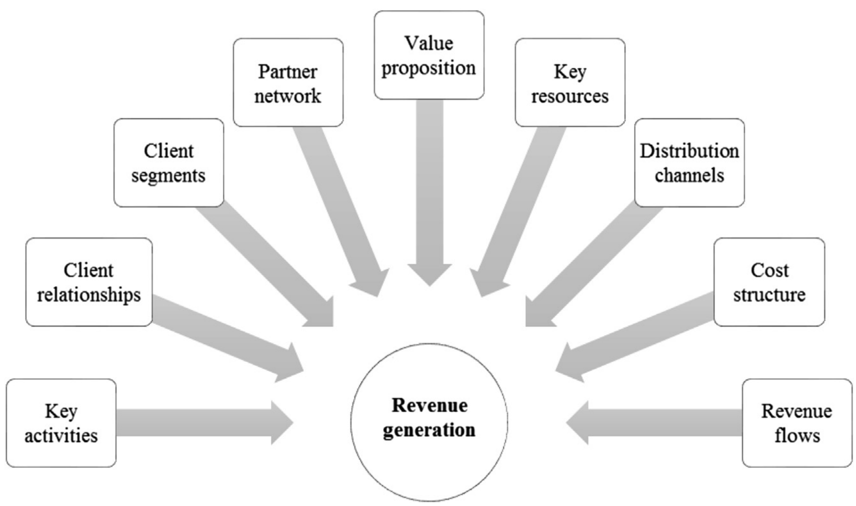

Fig. 10. Business model of the airline based on revenue generation.

depends on many factors such as the external deregulation of the sector and internal restructuring. Advanced models require various profiles of passengers and a variety of market segments to be served by any model. Traditional companies need to implement a more flexible portfolio of innovative business models, ensuring synergies of networks whenever possible. Decisions that require organizational change can be a major challenge, but innovation can become the decisive driver of progress in airlines.

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