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Assessing the air cargo business models of combination airlines

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ABSTRACT

Notwithstanding the fact that the air cargo business is generally a secondary one to the passenger business for combination airlines, it can have an important role to play in their profitability. However, growing challenges are threatening the market positions of the combination airlines. Improving their market positioning depends, amongst other factors, on appropriate business models. Yet, the literature on the air cargo business models of combination airlines is scarce. This paper aims to contribute to closing this gap.

The research presented herein aimed to identify the representative business models of the combination airlines' cargo strategies. Three strategies have been considered. The research method included a series of structured interviews with key informants from combination airlines, namely: TAP Cargo, Brussels Airlines Cargo, SATA Cargo, Turkish Cargo, SWISS WorldCargo, Finnair Cargo, AF-KLM Cargo, Emirates SkyCargo, Lufthansa Cargo and IAG Cargo.

The ten air cargo business models and the representative business models of each strategy are described. The results suggest an overlap between the business models of different strategies. In addition, the results show that an evolution in strategy does not necessarily require a redesign of the business model, but tailored changes in specific components.

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1. Introduction

Global air cargo traffic has grown by around 5% per year over the last three decades (BOEING, 2014; Kupfer et al., 2011a). According to Kupfer et al. (2011b), in 2008, the combination airlines¹ accounted for around 50% of the traffic (measured in terms of RTK²). Similar figures were recently found by AIRBUS (2015).

The main customers of the combination airlines are service providers such as freight forwarders or GSA.³ Clancy et al (Clancy et al., 2008), estimated that freight forwarders control around 85% of the retail sales channel for general air cargo, while Hellermann (Hellermann, 2006) indicated an interval between 90% and 95%. In a movement initiated in the 1960s, most combination

airlines focussed efforts and resources on the passenger business, consigning the air cargo business to a secondary role (Rhoades, 2014). In a gradual market movement, the air cargo service providers began occupying the space left by the combination airlines (Allaz, 2004). Combination airlines, generally speaking, avoid direct competition with these providers. Firstly, competition would likely damage existing commercial relationships. Secondly, it could entail substantial investments, since combination airlines often lack the means (e.g., know-how, technology, business model) to be competitive in the air cargo market (Allaz, 2004). Such investments may not be affordable (Moorman, 2007).

The cargo market is, nonetheless, a business area that combination airlines are seldom willing to forego. Wide-bodied passenger aircraft, have considerable spare hold space, which, if used to carry freight, can provide an additional source of revenue at a marginal cost. Additional sources of revenue can play a pivotal role with regard to profitability and long-term survivability. By way of example, air cargo revenues accounted (second quarter 2011) for 31% of LATAM Airlines total revenues and around of 35% of shipments were carried in the belly of wide-bodied aircrafts (Casadesus-Masanell and Tarzijan, 2012).

Additionally, air transport business is characterised by marginal profits and cyclical behaviour (Doganis, 2006). The maximum

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¹ Combination airlines are air transport companies that provide both passenger and cargo services. The primary and core business is, however, the transport of passengers. Cargo is normally carried in the hold of the passenger airlines, but the utilisation of combi-aircraft or full-freighters is also possible.

² Revenue Tonnes Kilometres.

³ General Sales Agents.

return on invested capital for passenger and combination airlines is seldom above 5% per year, which is below the weight average cost of capital (IATA, 2014) and the returns in other competitive industries (Button, 2003, 1996; Doganis, 2006).

In short, whilst it is not considered a core business or even an appealing one, combination airlines are not in a position to simply ignore the air cargo market.

Having knowledge of how to develop adequate strategies and how to design the appropriate business models is of key importance if a company wants to remain competitive and ensure profits (Porter, 1996). A few publications concerning the business of passenger airlines have been published along with methodological proposals (e.g., Daft and Albers, 2015, 2013; Lohmann and Koo, 2013; Pereira and Caetano, 2015).

With regard to the air cargo business, these topics have thus far garnered little attention from academics. Few studies or research projects concerning the cargo strategies of combination airlines are available and we could find none that deals specifically with the business models.

This paper reports the results of research into the business models of combination airlines. The research was aimed at identifying the representative business models, if existent, of the combination airlines' cargo strategies. Strategy and business models are different concepts; however, their actual meanings are still subject to debate amongst scholars (Magretta, 2002). In this research we used Mintzberg and Waters (1985, p. 258) concept of planned strategy.⁴ Additionally, the study was based on Casadesus-Masanell and Ricart (2009) hypothesis that a business model is an instrument used to deploy a company's strategy. Hence, airlines pursuing a given strategy should exhibit similar business models. Variations between them are only acceptable to a certain extent. The set of plausible variations establishes the space of the business model of a given strategy and define the representative business model. The design of the actual business model should then take the representative business model into account if the company in question wants to achieve an adequate fit with the respective strategy.

This paper is structured as follows. Section 2 describes the relevant literature on air cargo strategies and general literature on business models, with a particular explanation of the framework deployed to study the business models. Based on the literature review, the research method is described in Section 3, including the sample companies. Section 4 is dedicated to the presentation of results. The framework, chosen in Section 2, is now used to characterise the sample airlines' respective business models and to support identification of the representative business model for each strategy. Finally, Section 5 presents a discussion of the results, concludes the paper and presents some avenues of future research.

2. Relevant literature on business strategy and business models

2.1. Literature on air cargo business strategy

Dewulf (2014) analysed the air cargo strategy of forty-seven selected combination and cargo airlines with varying dimensions and range operations, concluding that there were five main strategies: Basic Service Freighter (BSF), Full Service Freighter Operator (FSFO), Basic Service Combination Carrier (BSCC), Full Service Combination Carrier (FSCC), and Separate Profit and Loss Full

Service Combination Carrier (SFSCC). Only the three last strategies were considered in the research presented herein, as they relate to combination airlines. Table 1 characterises each strategy along eleven variables clustered in three dimensions of strategy: product, market and network. There follows a brief review of these three strategies.

Of the three strategies this is the one with the lowest level of commitment. All business decisions are driven by the passenger business. Cargo operations are merely considered a complementary service that serves to enhance the overall group's revenue performance. Combination airlines provide a basic range of products (e.g., track and trace of goods and customs clearance services) that are sold by small sales teams and generate relatively low yields. Air cargo business-related partnerships can be established with other airlines, but their focus is mainly driven by the passenger sector. The cargo is transported in the belly-hold capacity provided by passenger aircraft. The air cargo network (destinations) is defined based on the passenger business. Capacity management procedures seldom exist, making air cargo a marginally priced by-product. One example of such a combination airline is TAP Portugal.

- Full Service Combination Carrier (FSCC) Strategy:

Combination airlines following this strategy provide medium-range product differentiation (e.g., time definitive deliveries), with the services being sold by a professional sales team and a broader range of GSA (or others). Combination airlines in this category tend to follow procedures defined by air carriers in the SFSCC group, applying either marginal or joint product priced cargo services in their passenger network. The air cargo network (destinations) relies heavily on the passenger network, although independent cargo routes can be defined. Most of the cargo is carried in the passenger aircraft. Additionally, for specific cargo routes, ad-hoc chartered freighters may be hired. Whilst this is uncommon, a small fleet of dedicated freighter aircraft may also be used. Air cargo alliances and other partnerships are more common, but also highly dependent on the passenger sector. Examples of such combination airlines include KLM-Air France and British Airways.

- Separate Profit and Loss Full Service Combination Carrier (SFSCC)

This strategy is favoured by combination airlines with the highest level of commitment towards air cargo business. These companies provide a wide range of services and operations (e.g., warehousing, tailored transport and logistic services, and inter-modal freight transport services) which are managed and sold by own cargo representatives or even through a subsidiary company. They normally operate a dedicated cargo network that is designed according to market needs. They also source from the mother-company passenger network to the maximum extent possible. Additionally, where needed, they hire out dedicated air cargo services, either to other combination airlines, ad-hoc chartered freighters or air cargo service companies. These types of combination airlines are seen as market makers, that invest in regions that are explored to a lesser extent in cargo terms but also ensure overall operational profit derived from the passenger sector. Examples of combination airlines adopting this strategy include Lufthansa Cargo.

Dewulf (2014) proposal is aligned with previous studies undertaken by Doganis (2006). Table 1 compares the strategies proposed by both authors. Doganis (2006) identified three types of strategies: outsource, unit business and subsidiary. The first of these – the outsource strategy – was not considered by Dewulf. Conversely, parallels can be identified as far as the two remaining

⁴ Mintzberg and Waters (1985) defined the concept of planned strategy as a deliberate and intentional set of actions – i.e., plan – that collectively will contribute to the organisation achieving an envisaged market position in the medium to long-term.

Table 1

Airline clusters according to strategy.

- Basic Service Combination Carrier (BSCC) Strategy:

Dewulf (2014) strategies		–	Basic service combination carrier	Full service combination carrier	Separate profit and loss full service combination carrier
Doganis (2006) strategies		Outsource	Unit business		Subsidiary
Product strategy	Product differentiation	Basic product	Basic product	Medium range	Broad range
	Yield	None	Low	Medium	High
	CRM	GSA	Small sales team/GSA	Professional sales team	Professional sales team
	Alliances	Only for PAX transport	Only for PAX transport	Only for PAX transport	Vertical integration/Separate alliance
Market strategy	Capacity management	Not present	Hardly present	Basic	Complex
	Competitive behaviour	Market breaker	Market breaker	Follower	Market maker
Network strategy	Unit cost	Marginal costs	Marginal cost	Low	Medium to high
	Route network	Follows PAX network	Follows PAX network	Mainly follows PAX Network	Very large
	Hub	PAX hub	PAX hub	Mainly PAX hub	Mainly PAX hub
	Airport	Major airports	Major airports	Major airports	Mainly major airports
	Fleet	Only belly space	Only belly space	Belly space and ad-hoc freighters	Belly space and freighters

Adapted from Dewulf (2014) and Doganis (2006).

strategies are concerned, as follows:

- Unit Business Strategy

Combination airlines that adopt this strategy have a dedicated air cargo unit business within their organisation. The unit business can range from a cargo department with a low level of autonomy up to a separate division with independent accounting (Zondag, 2006). The strategies adopted by air cargo departments typically exhibit characteristics of the BSCC strategy, whereas the strategy of the separate divisions are closer to the FSCC strategy.

- Subsidiary Strategy

Combination airlines that adopt this strategy have a high commitment to the air cargo business. They recognise that the differences between the passenger and cargo businesses require different management and business strategies. In this sense, they opt to establish a subsidiary unit. This strategy is similar to the SPLFSCC strategy.

Reis (2010), elaborating on Doganis (2006) studies, proposed an additional strategy in relation to those airlines that opt out of the air cargo business. This strategy was not considered in this research, since by definition an airline without air cargo business is not a combination airline.

Taking a different approach, Morrell (2011) defined several types of passenger strategies: network carriers, regional carriers, major domestic carriers and low cost carriers. He then analysed the key properties of the air cargo strategy of each type. This perspective precludes any attempt to classify air cargo strategies as either Doganis (2006) or Dewulf (2014) have done, as Morrell analysed a business segment – air cargo – from the perspective of another market – passenger transport.

2.2. Literature on business models

The literature is richly populated with definitions of business models. Thus far, the term business model has been referred to as an architecture, design, pattern, plan, method, assumption, conceptualisation or statement of a company's strategy (Morris et al., 2005). Although consensus as to a definition is still lacking, most

authors do converge on a number of aspects. In detail, a business model describes how a company's resources are combined and transformed in order to generate value for its customers and other stakeholders, and “how a value generating company will be rewarded by its exchange partners that receive value from it” (Magretta, 2002). A multiplicity of components of a business model are proposed and debated (Morris et al., 2005). Of these, consensus around a selected few has been attained, which are considered to be the core building blocks of a business model: a customer value proposition, a profit formula, key resources and key processes (Johnson et al., 2008). The value generation aspect is the core of a business model. Keen and Qureshi (2006) argue that a business model is a vehicle for addressing how to balance value between the company and the customer. However, how business models are configured and combined is largely unexplored territory (Wikström et al., 2010). Multiple frameworks and proposals to support the design of a business models were published (Al-Debei and Avison, 2010; Casadesus-Masanell and Ricart, 2011; DaSilva and Trkman, 2014; Kallio et al., 2006; Leem et al., 2004; Mansfield, 2004; Osterwalder and Pigneur, 2010; Osterwalder et al., 2005; Timmers, 1998).

In our research work we adopted the definition initially proposed by Osterwalder et al. (2005) and subsequently updated by Osterwalder and Pigneur (2010), as follows: “a business model describes the rationale of how an organisation creates, delivers and captures value”. Additionally, Osterwalder and Pigneur (2010) propose a framework for fully representing a company's business model. The choice of this framework was based on the three following reasons: 1) it is exhaustive as far as the characterisation of a business model is concerned; 2) it is organised in a clear way, providing a suitable tool to support comparisons between business models, and 3) it has already been successfully applied in the context of transport business (Kalakou and Macário, 2013; Quak et al., 2014; Reis and Macário, 2015).

The framework is defined by nine variables – which the authors designate as building blocks, clustered into four dimensions, which are:

- Dimension 1 – Customer Interface
 - o *Customer Segment Building Block* – describes the people or other companies to whom the company aims to sell their

products or services. A Customer Segment must be as homogeneous as possible in order to enable tailoring of the products or services.

- o *Channels Building Block* – describes the possible ways to communicate with and reach each Customer Segment. The Channels show the Value Propositions to the Customer Segments.
- o *Customer Relationships Building Block* – describes the type and nature of the relationships established with each Customer Segment. Different purposes (e.g., attraction, retention, upselling) require different types of relationships.
- Dimension 2 – Value Proposition
 - o *Value Proposition Building Block* – describes the bundle of products or services offered by the company to a specific Customer Segment. The Value Proposition explains the added-value of the products or services to justify why customers should choose this company over another.
- Dimension 3 – Infrastructure
 - o *Key Resources Building Block* – describes the assets required to deliver the Value Proposition and make the business model work.
 - o *Key Activities Building Block* – describes the activities required to deliver the Value Proposition and make the business model work.
 - o *Key Partnerships Building Block* – describes the network of partners that will be necessary to deliver the Value Proposition and make the business model work.
- Dimension 4 – Revenue Model
 - o *Revenue Streams Building Block* – describes the sources of income.
 - o *Cost Structure Building Block* – describes all costs incurred in executing the business model.

Magretta (2002) argues that a business model is a “story that explains how an enterprise works”, thus when reading the narrative, the contents of each building block are justified by, and justify the contents of the others. As such, there is no established order in the arrangement of the building blocks. Instead, together they must establish a coherent, aligned and closed loop.

3. Research method: sample companies and structured interview

The research method was inspired by the principles of the grounded theory methodology (Birks and Mills, 2012). The literature review revealed a few references concerning the study of combination airlines' strategies in the air cargo market, but none in relation to the respective business models. Taking this as the point of departure, the research commenced by 1) opting for Dewulf (2014) taxonomy of combination airlines' air cargo strategies, and 2) selecting Osterwalder and Pigneur (2010) framework to support the characterisation of the business models.

The following step was the collection of data on combination airlines' business models. Data was gathered by means of structured interviews with open-ended questions. Structured interviews are preferred when the purpose of the research is to collect comparable data from multiple sources (respondents), enabling aggregation of information and making it possible to formulate hypotheses (Bryman, 2012), which was the context of the research presented in this paper. Additionally, the open-ended questions allowed respondents to present and justify their answers in detail, while keeping them focussed on the topic.

Interviews were carried out with key informed staff members of the designated combination airlines. The companies were chosen so as to achieve a comprehensive coverage of the air cargo market

in terms of size (in terms of annual RTK), network coverage and level of commitment (measured by sector revenue share). Key business characteristics of the combination airlines are listed in Table 2.

The respondents were chosen based on their knowledge of the air cargo business. All were, at the time of the interview, managers or directors of air cargo businesses with longstanding experience. A total of 11 interviews were conducted, as listed in Table 3.

The interview guide can be found in Appendix A. Drawing up the interview guide began with the adaptation of Osterwalder and Pigneur (2010) framework to the air transport business context. This entailed the identification of key variables of the air transport market for every building block. The list of key variables is presented in Table 4. In order to obtain an adequate level of detail certain variables were further disaggregated.

Before commencement of the main study, a set of unstructured interviews was conducted to refine the questions, including on the key variables. The purpose of this was to ensure questions were worded correctly and to avoid misunderstanding on the part of the interviewee (Seidman, 2013). The final interview guide was organised into ten parts, as follows: a first part concerning general information on the business characteristics, and nine parts corresponding to the relevant business model variables, as proposed by Osterwalder and Pigneur (2010). The interview guide was sent to all interviewees in advance of the interviews. All interviews were carried out during March 2014, and lasted on average for 90 min. They were recorded and transcribed. After the interviews the transcripts were sent to the interviewees for verification.

The data gathered served to support identification of the representative business models of the three strategies, following an inductive approach (Birks and Mills, 2012). To this end, common elements and patterns shared by the business models of combination airlines that have a similar strategy were identified and isolated. The results are presented in the following section.

4. Results

This Section presents the results of the research efforts. Section 4.1 and Section 4.2 identify the combination airlines' air cargo strategies and describe the respective business models. Section 4.3 describes the representative business models of the three strategies.

4.1. Identification of the air cargo strategies

The interviews began by asking respondents about their respective air cargo strategy, applying Dewulf (2014) proposed taxonomy. The results are listed in Table 5. The distribution amongst the three types of strategies is homogeneous, with a total of three companies in both BSCC and FSCC strategies and four companies in the SFCC strategy. In general, results are aligned with initial expectations. The single exception was AF-KLM Cargo, which we would classify as FSCC. The respondent claimed that there was a recent evolution towards this strategy, in terms of product differentiation, capacity management and route management.

4.2. Characterisation of the business models

Each respondent provided the necessary information and data to characterise the respective business model. The single exception was the IAG company, whose business model was based on the two interviews with British Airways World Cargo and Iberia Cargo. The presentation of a business model normally follows a narrative in which the various building blocks are described in detail. The detailed description of the ten business model is presented in

Table 2
Cargo business characteristics of the respondent combination airlines.

	Air cargo business characteristics traffic Figures (2012)			
	Sector revenue share	Cargo and mail transported (in thousands of tonnes)	RTK sold (in millions)	Cargo load factor
AF-KLM Cargo	11.0%	1383	10,600	64.5%
Emirates SkyCargo	15.2%	2100	9270	–
Lufthansa Cargo	8.8%	1700	8700	69.6%
IAG Cargo	8.4%	814	6080	–
Turkish Cargo	12.7%	463	2306	–
SWISS WorldCargo	11.0%	–	1500	80.0%
Finnair Cargo	14.0%	148	–	–
TAP Cargo	4.7%	84	335	45.2%
Brussels Airlines Cargo	–	–	179	–
SATA Cargo	4.3%	6	–	–

Table 3
Combination airlines and respondents' job positions.

Combination airline	Respondent's position	Combination airline	Respondent's position
AF-KLM Cargo	Country Manager	Turkish Cargo	Senior Manager
Emirates SkyCargo	Country Manager	Swiss WorldCargo	Senior Manager
Lufthansa Cargo	Country Manager	Finnair Cargo	Senior Manager
British Airways World Cargo (IAG Group)	Country Manager	TAP Cargo	Director
Iberia Cargo (IAG Group)	Country Manager	SATA Cargo	Director
Brussels Airlines Cargo	Senior Manager		

tabular form in [Appendix B](#)⁵.

4.3. Inference of the representative business models

The comparative assessment of the business models provided information to infer the plausible limits – or frontiers – of the plausible business models of each strategy. The results are presented in [Appendix C](#)⁶. Similarities between multiple building blocks were identified. These similarities were found both between business models of a same strategy, and between business models of different strategies. Similarities, or convergences, between business models for the same strategy were to be expected and in line with the research point of departure. After all, the business model is the tool that translates and materialises a strategy ([Casadesus-Masanell and Ricart, 2009](#)), hence we can expect multiple common points between business models for one and the same strategy.

Conversely, the similarities between the business models of different strategies are of particular interest. They could reveal that transitions between strategies might only require the tailored evolution of specific elements and not a full redesign of the business model. Further research is required to validate this assumption.

[Table 6](#) presents a simplified version of the results (the full results are listed in [Appendix C](#)). The following is a brief characterisation of the business models of each strategy.

4.3.1. Key partners

Key Partners are important in all strategies, and include passenger or freight airlines (under alliances or individual cooperation modes), airports, handling companies, RFS⁷ providers, IT software companies or customers.

Agreements with other airlines for cargo purposes are usually

established under special or normal prorate agreements and complemented by block space or codeshare agreements. Cargo business agreements between airlines that are members of the same passenger alliance are common. SFSCCs generally establish few partnerships, since they already run a wide and comprehensive air network. Conversely, FSCCs and BSCCs rely on such partnerships to expand their air network. This is particularly visible in the BSCC strategy area, where airlines are dependent on other airlines for operating outside their restricted geographic markets.

Airports (i.e., hub or main airport) are also key partners in all strategies. SFSCCs and FSCCs often also establish key partnerships with other national airports. In addition, SFSCCs also form partnerships with airports located outside their national territory.

Handling companies are another key partner category. Typically, in all strategies, handling operations in the hub or main airport are performed by own or affiliated handling companies. In other airports, ground services are commonly outsourced.

As far as RFS are concerned, one can distinguish between own and subcontracted forms of this service. In all strategies, RFS are common in the domestic and continental market. In addition, the FSCCs may also use RFS in other countries or continents.

Customers with higher yields in the cargo structure are also considered as key partners.

Owing to the increasing relevancy of IT systems (e.g., cargo management software), IT companies are increasingly recognised as key partners, particularly for the SFSCCs and FSCCs. Depending on the size of operations, different levels of IT services could be offered. SFSCCs have a high level of participation and assistance from these service providers, adjusting operations and technical aspects in line with market and resource requirements. BSCCs have only basic standard forms of these services and FSCCs have intermediary forms.

Other partnerships can be established, such as with ULD⁸ and container companies. The SFSCCs, due to their operational dimension, also have other key partners, such as maintenance companies.

⁵ [Appendix B](#) – Supplementary material available at the website.

⁶ [Appendix C](#) – Supplementary material available at the website.

⁷ Road Feeder Services.

⁸ Unit Load Device.

Table 4
Air cargo-related variables and sub-variables.

Building block	Variables	Sub-variables
Key partners	Airlines	Cargo alliance Other airlines
	Airports Customers Handling companies	Main hub Other airports
	Road feeder services Product portfolio	Normal Special Charter
Key activities	Marketing capabilities	Pax. aircraft Cargo aircraft Road feeder services
	Logistic management Fleet	Passenger Freighter Main Secondary
Key resources	Hub	Main Secondary
	IT cargo software Physical resources besides aircraft Differentiation from competitors	Main attributes Complementary attributes Geographic specificity Regions served
Value propositions	Cargo markets	Main attributes Complementary attributes Geographic specificity Regions served
	Complementary propositions Contracts	Types Most common
Customer relationships	Customer interaction Category Contact methods Performed actions Agencies	Branch offices GSAs
Customer segments	Main customers Secondary customers	
Cost structure	Economic type Cost allocation in Pax. aircraft Main costs	
Revenue streams	Overall cargo revenues (€) Customers	Pricing mechanisms Pricing time frame Higher yield markets Most lucrative actions Considered as Agreement type
	Airlines	
	Other	

Table 5
Air cargo strategies of the combination airlines.

	Basic service combination carrier (BSCC)	Full service combination carrier (FSCC)	Separate profit and loss full service combination carrier (SFSCC)
Combination Airlines	TAP Cargo, Brussels Airlines Cargo, SATA Cargo	Turkish Cargo, SWISS WorldCargo, Finnair Cargo, IAG Cargo	AF-KLM Cargo, Emirates SkyCargo, Lufthansa Cargo

4.3.2. Key activities

Substantial differences in terms of the key activities are identifiable between the three strategies.

The SFSCCs provide worldwide air cargo services, complemented by well-developed RFS networks. They have a presence in at least three continents and, frequently, in all continents. The FSCCs provide regional air cargo services, complemented with developed RFS networks. They tend to operate in specific regions with high revenue markets. BSCCs provide regional or specific air cargo services. They also make use of RFS but generally use sub-contracting for this. They tend to provide services in neighbouring continents, particularly in countries that match with certain

geopolitical interests. FSCCs and BSCCs commonly have a geographic coverage of up to three continents.

SFSCCs and FSCCs offer enhanced added-value logistic services, such as definitive time delivery, track and trace of goods (via internet), tailored freight services, specialised services (e.g., live-stock or controlled temperature) or customised customer web access (e.g., ordering and billing). BSCCs tend to offer basic logistic services, such as definitive time delivery and track and trace.

In all strategies scheduled air cargo services are provided. In addition, the SFSCCs and FSCCs, to a lesser degree, may also provide charter services.

In terms of market capabilities, all strategies provide cargo

Table 6
Key elements of the business models for each strategy type.

Strategy		Separate profit and loss full service combination carrier (SFSCC)	Full service combination carrier (FSCC)	Basic service combination carrier (BSCC)
Building Blocks of the Business Model	Key Partners	Few airline partners	Many airline partners	Limited airline partners
		Multiple airports	Main and other national airports	Main airport
	Key Activities	Specialised logistic management teams offering worldwide services	Specialised logistic management teams acting in specific regions	
	Key Resources	Freighter aircraft	Ad-hoc charters	Passenger aircraft
		Passenger aircraft	Passenger aircraft	
	Value Propositions	Worldwide services	Geographic specificity regions (higher yield markets)	Geographic specificity regions (lower yield markets)
	Customer Relationships	Special relationships with major customers	Consolidated relationship with important freight forwarders	Lower degree of customer interaction
	Channels	Direct contact and campaigns amongst freight forwarders		
	Customer Segments	International and regional freight forwarders		Regional freight forwarders
	Cost Structure	Heavy cost structure	Medium cost structure	Reduced cost structure
Revenue Streams	Up to 15% of total airline revenues		Less than 5% of total airline revenues	
Business Characteristics	Cargo	More than 500,000 tonnes	Up to 500,000 tonnes	Less than 100,000 tonnes
	Transported			
	Sold FTK	Up to 10 billion	Under 5 billion	Under 1 billion
	Cargo Load Factor	Higher than 50%		Lower than 50%

services in the belly-hold of passenger aircraft as well as RFS. Freighter aircraft services are only provided in the SFSCC and FSCC strategies, in the latter case with a limited scope of operations.

4.3.3. Key resources

Combination airlines' cargo resources consist mainly of the fleet, airport slots, IT software and ground physical assets. Fleet resources can be divided into passenger and freighter aircraft. SFSCCs commonly have a mixed fleet of at least 200 passenger and freight aircraft, many of which are wide-bodied aircraft. FSCCs tend to have a passenger aircraft fleet ranging between 100 and 200, many of which are wide-bodied aircraft. Freight aircraft are not common; instead, the airlines avail of ad-hoc freight charter services. BSCCs tend to have a passenger fleet below 75 aircraft, including some wide-bodied aircraft.

In all strategies companies have one hub or main airport. SFSCCs commonly have additional hub airports and secondary hubs are strategically located, providing worldwide coverage. However, FSCCs and BSCCs are mostly only present in secondary national airports.

Ground operations are also essential for air freight business. SFSCC and FSCC ground assets, such as cargo terminals and warehouses, are owned or controlled by affiliated handling companies. At the other end of the spectrum, BSCCs concede these operations to subcontracted or affiliated ground handling companies, and do not own any of these resources.

IT capabilities diverge across the three strategies. SFSCCs tend to have highly developed cargo management software, specifically designed to the company's requirements and range of operations. These are conceived by affiliated IT companies or firms subcontracted specifically by each airline. FSCCs search in the market for leader IT systems, sometimes derived from SFSCC IT service providers. BSCCs have low end IT services. They frequently purchase off-the-shelf products.

4.3.4. Value proposition

Elements of value proposition include: air network, geographic

specificity, customer oriented approach, reputation, price and quality of service.

Network coverage is an important value proposition. SFSCCs claim a comprehensive and worldwide coverage. FSCCs and BSCCs claim regional or specific markets.

SFSCCs offer their customers extensive global connections alongside their involvement in cargo operations (i.e., customised cargo services), responding to specific needs. This group also has highly developed IT capabilities and a vast RFS network. Value propositions of the FSCCs include the network (i.e., air network, RFS and ad-hoc full freighter charters) and customised services. Finally, BSCCs see air cargo as an ancillary service. The value proposition includes competitive pricing schemes or serving specific markets (e.g., island or a specific country). For both FSCCs and BSCCs, the location of the main airport and geographic specificity are also relevant value propositions.

4.3.5. Customer relationships

A limited set of contracts is used in all strategies. These include guaranteed space contracts, spot contracts, priority contracts and promotional contracts. The most common type are the spot contracts with a short time frame (under six months).

With regard to customer interaction, SFSCCs allow for the highest level, providing unique relationships with main customers complemented by a worldwide customs policy support service. FSCCs offer their customers medium to low interaction levels, while consolidating relationships with their primary customers. For the BSCCs customer cargo operation interaction is usually non-existent, although some airlines do provide a low level of customer communication, but only to their main customers and in special regular transportation cases.

4.3.6. Channels

Similar channels are deployed in all strategies.

Sales channels are mainly provided through personal assistance and automated services (e-booking) established by means of direct personal contact, telephone and e-mail. Actions performed by

cargo entities, including GSA, include direct contact and campaigns amongst customers, mainly freight forwarders. Dedicated personal assistance can also be provided to main customers in airlines in the SFSCC strategy segment.

Customers are reached through the companies' branch offices or GSA. SFSCCs commonly have at least ten branch offices and ten GSA agreements, thus satisfying clients and enhancing their global network. FSCCs typically have between five and fifteen branch offices located in the company's home country, higher yield countries or other relevant location. BSCCs usually have less than ten branch offices, also located in the company's home country and geographic specificity region. In both clusters, GSA agreements are established in regions served by the passenger segment.

4.3.7. Customer segments

Customers can be categorised according to their relevance in the revenue structure. The main customers are those that generate a substantial portion of a company's revenue. In all strategies, the freight forwarders are the main customers. This result is in line with the discussion in Section 1. SFSCCs' and FSCCs' main customers are usually a combination of international and regional freight forwarders, which can be considered as key partners. The main customers of BSCCs are the regional freight forwarders. In all strategies secondary customers are integrators and other cargo agents following by shippers and other customers.

4.3.8. Cost structure

Cargo transportation in passenger aircraft presents two different types of cost structure. SFSCCs and FSCCs adopt a joint product cost structure controlled by cargo revenue management systems, thus achieving price optimisation. BSCCs, on the other hand, consider cargo transportation as a by-product, so their services are marginally priced.

Full-freight aircraft (where they exist) are a significant cost component. SFSCCs generally have a considerable fleet of full-freight aircraft, and thus have a higher cost structure. FSCCs may have dedicated full-freight aircraft or alternatively hire ad-hoc charter services.

Costs related with RFS, administration, representatives and agents, and handling and documentation procedures also have a significant impact on the air cargo cost structure.

4.3.9. Revenue streams

The main revenue flows are derived from the selling of the air cargo services. In terms of overall cargo revenue, SFSCCs achieve cargo revenue of more than 1 billion euros, while FSCC companies reach 300 to 600 million euros, approximately half of the first group. BSCCs tend to generate up to 300 million euros in cargo revenue.

Most of the companies' cargo revenues are generated from customers. Prices are defined seasonally (except for promotional rates), and are defined with freight forwarders on a negotiation basis. Most lucrative operations consist in working with main customers on general and special product transportation in higher yield markets.

Extra revenue can also be achieved in working with partner airlines, under special or normal prorated agreements. In particular, SFSCCs with an extended freighter aircraft fleet can provide charter services to other combination airlines, primarily the FSCCs.

5. Discussion of results and conclusions

The research presented in this paper set out to identify representative business models in various air cargo strategies. Strategy and business models are different concepts. In this research, we used the concept of planned strategy proposed by Mintzberg and Waters (1985) and the concept of business models proposed by Osterwalder and Pigneur (2010). Additionally, we also considered the hypothesis laid down by Casadesus-Masanell and Ricart (2009). The analysis of the business models was based on the framework proposed by Osterwalder and Pigneur (2010). These authors proposed a total of nine variables (i.e., building blocks) to characterise a business model. The air cargo strategies were defined according to Dewulf (2014) taxonomy, in a total of three. The research method included a set of eleven structured interviews with key informants.

This paper makes important contributions to the literature. A first contribution stems directly from the results and it included 1) the characterisation of the business models of ten combination airlines (listed in Appendix B) and 2) the characterisation of the representative business models of each air cargo strategy, including the identification of the limits of every building block (listed in Appendix C). Due to the lack of literature on air cargo business models, this research adds new insights and knowledge on this field.

A second contribution was the disclosure of similarities between business models belonging to different strategies. The similarities may indicate that evolution from one strategy to another does not necessarily require the redesign of the business model, but only changes in specific building blocks in the business models. If this assumption is proved, it could mean that combination airlines can rationalise their resources by investing in specific elements of the business model. Further research on this topic is required. Regardless of this specific aspect, size seems to be decisive for the possibility of a company choosing a specific strategy and, inherently, a business model. Indeed, the superior strategies – i.e., SFSCC and FSCC – seem to be accessible only above certain business volume thresholds, which of course has implications at the level of the business models (e.g., fleet, network, services, etc.). Further research is required on determining those thresholds and the implications for the business models.

Thirdly, rather similar value propositions were identified in business models belonging to different strategies. These results may suggest convergence amongst the business models (Gustafsson and Schwarz, 2013). A similar phenomenon has been already identified in respect to the passenger airlines (Bell and Lindenau, 2009; Daft and Albers, 2013). Business model convergence is often a consequence of the natural maturation of a market, subject to a process of standardisation and based on homogenisation (Lieberman and Asaba, 2006). Nevertheless, this was also found to harbour inconveniences for the companies (Thornhill and White, 2007). The research has thus raised some new pertinent questions. If combination airlines offer similar value propositions, then how can they stand out one from another? Can they continue to attract customers in a sustainable way? Or, how can unique value propositions be created?

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Appendix A. Interview guide

Table 7
Survey structure and purpose behind questions

Part	Question	Purpose
Business Characteristics	Which of the following strategies better suits your company's cargo business? How is the cargo network defined?	In reference to cargo strategy models defined, knowing which one best suits cargo operations The bases for definition of the cargo network, in accordance with passenger or cargo business
	Does every passenger destination have cargo services? Considering the airline's cargo business volumes, how important are the following markets?	Availability of cargo destinations in passenger network Relevant cargo business markets, establishing the company's geographic specificity and regions served
Key Activities	What types of services are offered in the cargo sector? How representative are the following product categories in terms of volume transported?	Services offered in order to determine product portfolio Determine the transportation shares for product types, revealing those that generate higher yields
Customer Segments	How important are the following customers for your company's business model? How are other air companies with whom your company works usually considered?	Determine company's main and secondary customers Perceiving other airlines' participation in cargo business
Channels	Which sales channels are used? What are the main contact methods?	Type of assistance provided to customers How cargo representatives connect with customers
Value Propositions	What distinguishes your company's cargo services from competitors?	Which attributes differentiate the company from opponents (block complemented by collected information)

Table 8
Survey structure and purpose behind questions

Block	Question	Purpose
Customer Relationships	What is the most common type of contracts established with customers? What is the typical time frame of the contract chosen above?	Common contract types contributing to company's revenue Contract time frames, operations driven by long or short-term agreements
	Does your company allow customer involvement in route definition and cargo operations?	How is the system structured, does it permit customers to use it or allow their interaction
Key Partners	Which type of agreements does your company usually practice with other air companies? How does your company perform RFS?	How the company works with partner airlines How the airfreight service is complemented with other modes of transportation
	How does your company perform handling procedures? Does your company have other relevant partners?	On what basis handling procedures are defined Other partnerships that may be important, completing the overall supply chain
Key Resources	How is the business volume distribution per type of aircraft? How many freight aircraft does the cargo business have? What is the aircraft type? At the moment, does your company have any Charter/ACMI cargo contract?	Cargo volume distribution, share of transported cargo in passenger and freight aircraft Determine the level of commitment and importance of cargo operations in company's structure Assess lack of resources in air cargo demands
	Does your company hold other physical resources besides aircraft? Are financial resources a fundamental element in your company's business model?	Extra resources and services related to air cargo operations Perceiving the importance of financial resources
Revenue Streams	Of the following agents, who can generate more revenues streams?	The importance of main customers and other airlines' participation revenue wise
Cost Structure	Which price mechanisms are usually established with customers? Which economic type suits your company's business model?	How the company prices their services Dominant economic type, wherein capacity corresponds to economies of scale and destinations correspond to economies of scope
	On what basis does your company assign cargo costs? How important are the following elements in your company's cost structure? Is there any route where the passenger sector is cross-financed by the cargo sector?	Cargo cost allocation in passenger aircraft Actions performed besides pure air transportation representing significant structure costs The importance of cargo sector to group procedures

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Appendix B. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.jairtraman.2016.08.011>.

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