Analysis of passenger airlines’ cargo business models

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1. Introduction

Air transport industry is characterized by ceaseless competition, introducing pressure in airlines management to achieve cost reductions and propel profits. In order to comply with that, airlines are required to take advantage of opportunities previously unexplored. These new ventures can be new market's entrance or committing to other sector business, particularly cargo operations.

Despite the global financial crisis registered in 2009, air cargo has evolved and gained transportation market over the last decades. Forecasts for the next 20 years reveal a substantial air cargo traffic growth [1]. Exploiting this business by the passenger airlines may lead to overall results enhancement.

This project was motivated in perceiving how passenger airlines relates to their cargo business and which procedures justify the growth level of commitment to cargo business by management boards. The growing of cargo sectors relevance on the overall structure revealed a business niche, where several passenger airlines should examine in order to improve their business performance, conciliating passenger and cargo business.

Objectives of this project consist in evaluating and defining business models in cargo sectors from passenger airlines. Adopting Osterwalder’s business model proposition, this will be adapted to the air cargo sector, accomplishing new and more detailed description of previous business models. The ultimate objective is to contribute for a better understanding of passenger airlines cargo business models.
2. Methodology

Methodology consisted in the following steps:

1. Business models and strategies evaluation

This first section consists in a literature review according to previous business models and strategies studies. Business models are based in Osterwalder’s proposition. Strategy aspects follow studies performed by Wouter Dewulf to air cargo carriers.

2. Market analysis in passenger airlines cargo operations

This project had a proactive attitude on gathering the necessary information. Revealing current practices in the cargo sector, market analysis consisted in collecting information from cargo executives through personal interviews and online inquiries.

3. Adaptation to Osterwalder’s business model canvas

Gathered information from first and second steps, this will be processed and combined to Osterwalder’s business model. Adaptations will be performed according to relevant patterns, achieving a combination between business models attributes to cargo procedures.

4. Business models comparison and final models definition

Comparison between business models blocks will be analysed, attaining final business models concepts.

Project follows the scheme present in Figure 1. Strategy and business models sections will be merged to passenger airlines market analysis, attaining a business model canvas adapted to passenger airlines cargo operations. This canvas will allow new business models perspective.
3. Strategy and business models concepts

3.1. Strategy

Strategy and business models are two fundamental business aspects, in which could be deeply interrelated among each other [2]. Not being the core of this project, strategy aspects were considered, complementing business models information and assisting on the creation of final business model framework.

Describing how an airline engages competitors and responds to market environments, Wouter Dewulf studied this subject to air cargo carriers. Author indicates that management decisions fall in three groups corresponding to product, market and network strategies [3].

- **Product strategy**

  Product strategy is based on the resources that an air company has, and how they can be exploited in order to obtain a competitive advantage against opponents. Product differentiation is highly dependent on commitment levels given to cargo operations [4].

  Yield management supports product differentiation, managing available and booked capacity in each route. Customer relation management is also an important variable in product strategy, offering product’s to customers and granting their satisfaction and commitment [3].

- **Market strategy**

  Incorporating market conditions to their decisions, this category corresponds to market variables that an air company should evaluate. A crucial variable is capacity management, adjusting capacity to the required service. For an efficient capacity management, short and long term contracts should be provided [3].

  Market strategies also relate to the global position that the company wants to achieve. Global position definition resides in establishing a network of routes and hubs for cargo sector. Relations with other cargo carriers should also be considered, opting to compete or cooperate with them [4].

- **Network strategy**

  The development of a network strategy considers unit costs, route network and alliances. A network should be build up according to unit costs, and these must be minimized or at least compensated by the overall system. Route network should evaluate which routes are profitable in the practice of cargo business bearing in mind airline’s global positioning [4].

  Adhering to alliances, joint-ventures or cooperation’s with other air companies in cargo sectors can generate customer value, increasing network’s range of proposals. Partnerships also improve revenues and cost synergies, filling up unused capacity [3].
3.2. Osterwalder’s business model proposition

After analysing business models propositions, Osterwalder’s model reunites the necessary attributes for the purpose of this project. Contemplating factors from value creation, financial features, flow information, network of partners and business logic delineation in order to exploit synergies and avoid conflicts among the involved agents.

Author’s business model canvas consists in nine interrelated building blocks, showing how an organization does business and interacts with other entities in order to generate profit [5]. Table 1 supplies a general description of each business models blocks.

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Partners</td>
<td>Creating alliances and partnerships with important suppliers and agents, reducing risks and acquiring resources leading to business model optimization.</td>
</tr>
<tr>
<td>Key Activities</td>
<td>For a business model to work, a company must produce or provide key activities to their customers.</td>
</tr>
<tr>
<td>Key Resources</td>
<td>The required assets to practice a certain business model. These resources allow a company to create and offer value propositions into markets.</td>
</tr>
<tr>
<td>Value Propositions</td>
<td>Describes a variety of products and services, or a combination of both, that an organization could do in order to create added value to a specific customer segment. Value propositions aim to satisfy and solve customer’s problems.</td>
</tr>
<tr>
<td>Customer Relationships</td>
<td>Type of relationship that an organization wants to have with their customer segments.</td>
</tr>
<tr>
<td>Channels</td>
<td>How an organization reaches its customer segments, delivering value propositions.</td>
</tr>
<tr>
<td>Customer Segments</td>
<td>Define which clients or group of people the company intends to reach and serve with their products or services.</td>
</tr>
<tr>
<td>Cost Structure</td>
<td>Operating a business implies costs from the company that performs it. This block describes the most important induced costs of running a business model.</td>
</tr>
<tr>
<td>Revenue Streams</td>
<td>Represents the cash flow generated by offering a product or service to customer segments, and how a company capitalizes with that.</td>
</tr>
</tbody>
</table>


3.3. Passenger airlines business models

Providing a bridge between business model concept and air cargo industry, this project also includes the perspective of Rigas Doganis in “The Airline Business” and Willem-Jan Zondag in “Competing for Air Cargo”. For these authors, cargo business models are defined according to sector structure given by management boards.

Models can follow an outsourced model, wherein passenger airlines focus in flight operations leaving the complementary activities to external service providers [6]. Cargo commitment levels are relatively low, usually considered as passenger sector’s by-product [7]. Cargo sectors can also be structured as a unit business, providing a medium commitment to non-core departments. This model reveals that an airline understands the importance of having ancillary services, such as cargo, thus controlling them directly [6]. The last model proposed by these authors, is the subsidiary model. This model indicates that an airline can provide different business sectors, supporting or not the passenger business [7]. Subsidiary model is the highest level of commitment offered by management boards to non-core departments.
4. Passenger airlines cargo business models

Previous researches in this area revealed that non-core sectors are commonly defined according to the structure given by management boards. Cargo sectors are no exception, according to the structure given these can be under a subsidiary model or unit business model structure [6].

In this research, seven of the studied carriers are structured under a subsidiary model, although with different attributes. Another distinction is needed, accessing the registered differences. Thus, are proposed two types of subsidiary model, corresponding to high and low end forms of this model.

The remaining three airlines are structured according a unit business model. The foundation of this model remained the same, upgraded by new features according to business model parameters evaluated.

Not only assessing business models, overall business characteristics and strategies were associated to each model definition. Strategy division followed previous studies from Wouter Dewulf regarding this subject while business characteristics reveal cargo related variables, such as cargo transported, sold freight tonne kilometre and cargo load factor.

Summarizing the information evaluated, Table 2 was created providing the final framework on passenger airlines’ cargo business models.

<table>
<thead>
<tr>
<th>Business Model Blocks</th>
<th>Concept Proposed</th>
<th>High-end Subsidiary model</th>
<th>Low-end Subsidiary model</th>
<th>Unit business model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Partners</td>
<td>Few airline partners</td>
<td>Many airline partners</td>
<td>Limited airline partners</td>
<td></td>
</tr>
<tr>
<td>Key Activities</td>
<td>Specialized logistic management teams offering worldwide services</td>
<td>Specialized logistic management teams acting in specific regions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Resources</td>
<td>Freighter aircraft Passenger aircraft</td>
<td>Ad-hoc charters Passenger aircraft</td>
<td>Passenger aircraft</td>
<td></td>
</tr>
<tr>
<td>Value Propositions</td>
<td>Worldwide services</td>
<td>Geographic specificity regions (higher yield markets)</td>
<td>Geographic specificity regions (lower yield markets)</td>
<td></td>
</tr>
<tr>
<td>Customer Relationships</td>
<td>Special relationships with major customers</td>
<td>Consolidated relationship with important freight forwarders</td>
<td>Lower customer interaction</td>
<td></td>
</tr>
<tr>
<td>Channels</td>
<td>Direct contact and campaigns among freight forwarders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Segments</td>
<td>International and regional freight forwarders</td>
<td>Regional freight forwarders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Structure</td>
<td>Heavy cost structure</td>
<td>Medium cost structure</td>
<td>Reduced cost structure</td>
<td></td>
</tr>
<tr>
<td>Revenue Streams</td>
<td>Up to 15% of total airlines revenues</td>
<td>Less than 5% of total airlines revenues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy</td>
<td>Separate Profit and Loss Full Service Combination Carrier (SFSCC)</td>
<td>Full Service Combination Carrier (FSCC)</td>
<td>Basic Service Combination Carrier (BSCC)</td>
<td></td>
</tr>
<tr>
<td>Business Characteristics</td>
<td>Cargo Transported</td>
<td>More than 500 thousand tons</td>
<td>Up to 500 thousand tons</td>
<td>Inferior than 100 thousand tons</td>
</tr>
<tr>
<td></td>
<td>Sold FTK</td>
<td>Up to 10 billions</td>
<td>Under 5 billion</td>
<td>Under 1 billion</td>
</tr>
<tr>
<td></td>
<td>Cargo Load Factor</td>
<td>Superior to 50%</td>
<td>Inferior to 50%</td>
<td></td>
</tr>
</tbody>
</table>
• **Key Partners**

Granting the viability of cargo operations, every passenger airline provides partnerships relatively to freight transportation.

Passenger airlines with high-end subsidiary model usually assume an attitude of performing cargo operations. Accomplishing that, this model suggests fewer airline partnerships. In terms of airport partner’s, besides having their national hubs as a referral point, these also have partnerships in strategically located airports enhancing worldwide coverage.

Passenger airlines adopting a low-end subsidiary model rely heavily on partners’ contribution in order to improve cargo operational performance. These can register high numbers of partnerships with other airlines. Airports partners are usually confined to national and geographic specificity hubs.

Passenger airlines using unit business model have limited cargo operations, also reflected in airlines partnerships. Hugely dependent on geographic specificity markets, partner airlines can perform cargo transportation outside these markets. Airports partnerships are usually present in national airports.

• **Key Activities**

Offering a broad range of transport possibilities, airlines adopting high-end subsidiary model provide specialized worldwide airfreight logistic services with customs understanding, managing and marketing the majority of resources, such as passenger belly-hold capacity, freighter aircraft and road feeder services.

With a reduced scope of services comparatively to the high-end model, low-end subsidiary model logistic operations are focused on geographic specificity regions corresponding to higher yield air cargo markets. With specialized logistic management teams acting in specific regions, these control airline’s cargo resources, such as passenger belly-hold capacity, ad-hoc freighters and important road feeder services.

Having a minor range of cargo operations, unit business model logistic services are tailor-made to geographic specificity markets. These market passenger belly-hold capacity and few road feeder services.

• **Key Resources**

Passenger airlines adopting any of these models can provide freight transportation in the belly-hold of passenger aircraft and in road feeder services.

In the high-end subsidiary model, these services are supplemented by the presence of own freighter aircraft. In terms of ground services, airlines possess ground assets, controlled by group's affiliated handling companies. Managing freight processes, this model suggests a highly developed IT cargo software, specifically design to airline’s resources and requirements.
In the low-end subsidiary model, can also supplement or complement freight transportation in the belly-hold of passenger aircraft by offering exclusive ad-hoc full freighters, usually in peak markets demands. Ground services are performed by owned or affiliated companies in which are controlled by a reasonably developed IT cargo software.

With reduced commitment in cargo activities, airlines adopting unit business model only provide cargo transportation in the belly-hold of passenger aircraft without any freighter services. Ground services are relegated to subcontracted or affiliated handling companies. IT cargo software is present, however with low stages of development.

• **Value Propositions**

Differences between business models consist mainly in geographic specificity, range of operations and acting markets.

High-end subsidiary model offers its customers extensive global connections, on a worldwide basis.

Airlines adopting a low-end subsidiary model, focus cargo operations in geographic specificity regions, usually higher yield markets with a significant dependence of air cargo transport.

Unit business model considers air cargo as ancillary service, complementing passenger ventures. Hence, cargo operations are driven by geographic specificity markets. These usually correspond to lower yield cargo markets.

• **Customer Relationships**

All across the three models, contracts can be defined as guaranteed space (allotments), spot on contracts, priority contracts and promotional contracts. The parameter differentiating business models in this block is customer interaction on cargo operations. In high-end subsidiary model, cargo agents provide special relations with major customers. Instead low-end subsidiary model offers consolidated relations to important freight forwarders. Unit business model, cargo operations interaction is usually non-existent, except for punctual cases in special regular transportation cases with main customers.

• **Channels**

Revealing a uniformity of procedures across the three models, channels block consist mainly in direct contact and campaigns from cargo agents among freight forwarders, in order to establish commercial contracts.

• **Customer Segments**

Customers can be categorized according their relevance in revenue structure. In subsidiary models, main customers correspond to international and regional freight forwarders. In the other spectrum, unit business model is driven by regional based freight forwarders.
In the three models, secondary customers consist in integrators and other cargo agents following by producing companies or final clients.

- **Cost Structure**

The presence of freighter services, owned or chartered, are a significant elements in terms of company’s cost structure. Thus, passenger airlines following a high-end subsidiary model will have a heavier cost structure due to its extensive range of operations and freighter fleet. In low-end subsidiary model, these usually establish ad-hoc charter freight contracts, representing extra costs in their structure.

Unit business model, with confined cargo operations and no freighter services, have a lighter cost structure comparatively to other models.

Cargo transport in passenger aircraft has two different types of cost structure. Subsidiary models adopt a joint product cost structure controlled by cargo revenue management systems. Instead, Unit business model considers cargo transport as a passenger’s by-product, thus being marginally priced.

- **Revenue Streams**

In terms of revenues, cargo sectors following subsidiary models can achieve up to 15% of total groups revenue share. Instead, cargo sectors structured as unit business model represent less than 5% of total airlines group revenue share.

In all business models, extra revenues can be attained in working with partner airlines. High-end subsidiary model also has revenue enhancement in providing freighter charter services.

5. **Conclusion**

Profit challenges in passenger airlines lead management boards to focus their attention in cargo sectors. Nowadays, passenger airlines with cargo operations see this sector as a complementary or supplementary business in order to promote overall performance gains. Cargo sectors are highly driven by commitment levels provided, influenced by structure given and allocated resources.

Every company, explicitly or implicitly, perform a particular business model, analysing and describing the rationale behind supplying a value proposition to their customer segments. Business models provide value for the company and customers, exploiting synergies and avoiding conflicts among the involved agents. From the available business models frameworks available on defining business, Osterwalder’s nine block canvas reunited the necessary attributes for the purpose of this project.

Literature review consisted in analysing air cargo carriers’ strategies, overall cargo business characteristics and previous studies in passenger airlines business models. These three subjects provided extra attributes in order to understand airlines’ business models.

Not being the core of this project, air cargo carrier’s strategies followed Dewulf studies in this area. According to the author, strategies can be fitted in three major segments encompassing variables
regarding product, market and network strategies. Cargo business characteristics give an overall indication of airlines’ cargo related figures and operations.

Previous air cargo business models characterize airlines cargo sector according their structure, defined as outsourced, unit business or subsidiary model. This project uses these definitions as a starting point, in which wishes to improve.

Data collection was performed through personal interviews and online inquiries to airlines’ cargo agents. Addressing ten European airlines, or acting in this continent, this information was worked and adapted to Osterwalder’s business model proposition, providing further basis to final business model framework.

In order to understand if business models from a passenger airline relates to their adopted strategies, airlines were clustered according to Dewulf empirical observations of strategies from air cargo carriers.

After information treatment, can be concluded that previous air cargo business models are currently inadequate. The diversity of attributes encountered in the subsidiary model suggests an internal separation according to cargo sectors performance levels. Thus, the creation of high-end and low-end subsidiary models. Unit business model remains the same, but now defined by more features.

Subsidiary model provides the highest commitment level from the analysed business models. This model recognizes cargo business as one autonomous business component, independent of passenger business. Adopting a philosophy of supplementing belly-hold passenger aircraft capacity with freighter contribution, owning or chartering these aircraft, allows cargo divisions achieving high sector revenues. In this dissertation it is proposed two subsidiary models variations, corresponding to high and low ends of this model.

High-end subsidiary model is characterized by providing worldwide cargo services by focusing in numerous regions, competing among air cargo industry leaders. Instead, low-end subsidiary model is mainly driven by cargo transportation to geographic specificity regions, an evolution provided from passenger business ventures. These regions are characterized for being higher yield air cargo markets. In this model, freighter services are also provided usually under charter agreements.

Unit business model is still limited and dependent from the passenger business, where their range of cargo operations is confined to geographic specificity markets. Providing a lower level of commitment to cargo operations these sectors lack structural independence, thus hampering the overall sector’s performance.

The proposed business models also coincide with strategy studies provided by Dewulf, revealing an interrelation between subjects. Cargo sectors embracing a high-end subsidiary model are likely to follow strategies defined in a separate profit and loss full service combination carrier (SFSCC). The same occurs to the low-end subsidiary model and unit business model, following strategies from a full service combination carrier (FSCC) and basic service combination carrier (BSCC), respectively.
Cargo business is still driven by commitment levels by management boards, highly influenced by sectors structure. Combining cargo and passenger business, interconnecting business models and strategies from both divisions can guarantee passenger airlines’ future sustainability in the aggressive air transport industry.

6. References


