MANAGEMENT STRATEGIES IN EUROPEAN AERONAUTIC INDUSTRY IN THE 1970 – 2013 PERIOD

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ABSTRACT

The aim of this paper is to give a synthetic snapshot over the evolution of the architecture of the European aeronautical industry and the strategies applied in this industry between 1970- 2013. Taking into account the evolution in time of the aeronautic structure, we identified the principal means by which this industry has gradually gained supremacy in the market. The paper is structured as follows: the first part presents the scientific references; part two focuses on the structure, management strategies and performance of the Airbus Group over the period 1970 – 2013 and the last part is devoted to conclusions.

KEYWORDS: *aeronautic industry, industrial structure, organizational strategies, Airbus*

JEL CLASSIFICATION: L220, L250

1. INTRODUCTION

Based on Europe 2020 Strategy, which promotes an "Innovation Union" in order to meet the society's challenges and encourages an efficient use of natural resources in order to lead to a more greener and more competitive economy, we can say that aviation is a crucial factor of the european integration by providing essential transport links. Innovative technologies from the aeronautical sector are catalysts for the economic and technological sectors which contribute to the increasing of European economy as a whole. Competition in the airline industry has always been fierce, given that countries like United States and Russia (traditional rivals of the European aeronautical industry) as well as new competitors such as Brazil, China, India, Canada (who understood the strategic nature of aviation) invest significantly in research and development programs.

The aim of this paper is to give a synthetic snapshot over the evolution of the architecture of the European aeronautical industry and the strategies applied in the industry between 1970- 2013. Taking into account the evolution in time of the aeronautic structure, we identified the principal means by which this industry has gradually gained supremacy in the market. The paper is structured as follows: the first part presents the scientific references; part two focuses on the structure, management strategies and performance of the Airbus Group over the period 1970 – 2013 and the last part is devoted to conclusions.

The main research methods used in the present paper are analysis and synthesis. Therefore, starting with the European documents and public information available on the large aviation group websites we constructed the architecture of the European aviation industry and we summarized the information on competitive strategies.

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2. THEORETICAL REFERENCES

According to "structure-behaviour-performance" (Tirole, 1993) paradigm, market structure (number of sellers, the degree of product differentiation, costs structure, degree of vertical integration of sellers, etc.) determines the firms' behavior (defined broadly as all actions of firms that pursue the adapting on the markets in which they are operating), and this behavior in turn determines market performance (efficiency, the report price/cost margin, product variety, innovation rate, profit and income distribution). The paradigm has evolved over time, through the integration of some additional elements, such as state intervention. Scherer and Ross (1990) notes that government intervention through taxes, subsidies, regulations and price controls affect both the market structure and the behavior and performance of companies.

The focus of the present work on the European region has started on one side from Romania's status as EU member, and on the other hand from the majority's conclusion of the specialized work that aviation industry is by excellence a geographically concentrated industry. ECORYS report (2009) made for the European Commission shows that 80% of the European aerospace is concentrated in France, Germany and Britain, countries that concentrate at the same time 70% of the overall workforce. Hassen, Klein and Tremblay (2011), quoting Niosi and Zhegu (2010) states that "85% of American aviation industry is concentrated in six metropolitan areas: Seattle, Los Angeles, Dallas, Hartford, Boston and Cincinnati." According to the same authors, this industry has a pyramidal structure with leading companies that control the entire value chain and it is characterized by a significant level of cooperation between the main stakeholders, including government agencies. Salvetat, Geraudel and d'Armagnac (2013) analyzes the European aeronautics industry from the resource-based point of view and concludes that the development of cooperation in the industry was due to the need of sharing and creating the resources together, in order to benefit from public funding and to have access to new markets. Alfalla-Luque, Medina-Lopez and Schrage (2013) studied the supply chain integration in the aeronautical sector from the perspective of the information integration, coordination and resource sharing and organizational linkage relationship. Using as a method the interviews with experts and focus groups, these authors showed that there is enough space for improving the information sharing among partners in the aviation industry and that aviation clusters are beneficial in this regard. In addition, they stated that the need to share high costs of development led to the formation of some strong alliances and to establishment of long-term cooperation relationships. Adrangi, Chow and Raffiee (1999) examined in their work the effect of technology and market structure over the airline fleet composition, in terms of deregulation implemented by the USA in the 80s. Their main conclusion was that "airline fleet use and aircraft acquisition are jointly determined by the interaction between market structure and technology."

This paper provides an overview of the market structure in the aeronautic industry and confirms that this industry is dominated by few companies from five European countries. Also, it is confirmed that at the base of the cooperation was the need to compete globally by sharing the costs of research - development and production. Gradual concentration and cooperation in various forms have increased market share of the European aviation industry worldwide.

3. EUROPEAN AERONAUTICS INDUSTRY- HISTORY, STRUCTURE AND PERFORMANCE

► The structure of the European aviation industry

Airbus program was officially born in 1969 as a Franco-German consortium, involving partners from United Kingdom and Netherlands, with the stated aim to face the competition with the USA. The partners decided to establish a unique structure led by the French law – Economic

Interest Group (GIE), which allowed France, Britain and Germany to work together as a consortium on A300 aircraft while the remaining activities of each enterprise remained separate. According to historical documents (Airbus, n.d.a) on 18 December 1970, Airbus Industry (as GIE) was officially established, form by Aerospatiale France - a fusion of SEREB, Nord Aviation and Sud Aviation, and Germany with Deutsche Airbus - a group of four companies, Messerschmittwerke, Hamburger Flugzeugbau, VFW GmbH and Siebelwerke ATG, each with a 50 percent share. The headquarters were initially settled in Paris, and since January 1974 they have been moved to Toulouse. GIE was led by a supervisory board, a decision-making forum concerning group policies. In 1971, the consortium has integrated the Spanish Company Construcciones Aeronauticas SA (CASA) who took a package of 4.2 percent of the stakes held by Aerospatiale and Deutsche Airbus, reducing their share to 47.9 percent (see Table 1).

Table 1. Economic Interest Group (GIE) – 1971

Frace SEREB Sud Aviation Nord Aviation	47,9%
Germany Messerschmittwerke Hamburger Flugzeugbau VFW GmbH Siebelwerke ATG	47,9%
Spain Construcciones Aeronauticas SA (CASA)	4,2%
VFW Fokker (Olanda) Hawker Siddeley (Marea Britanie)	Asociați

Source: adapted from Airbus, Historical documents

Analyzing the historical documents we realize that the structure has changed over time (Airbus, n.d.b). In 1989 the Deutsche Airbus consortium in Germany was taken over by Daimler-Benz, forming the Daimler Aerospace SA, or DASA. In 1998 France has privatized the Aerospatial (Airbus, n.d.c) company which has merged with Matra and in 1999 the companies from France, Germany and Spain, namely Aerospace, DASA and CASA decided to merge together in order to become the European Aeronautic Defence and Space Company - EADS, which will hold 80% of the new Airbus Company, while British Aerospace which has become known as BAE SYSTEMS will own the rest of 20%. In 1999, was also established the Airbus Military division in order to produce the A400M model, the first Airbus military transport aircraft "in consultation with a number of European governments" (Airbus, n.d.c). The new integrated Airbus S.A.S. company (Société par actions simplifiée) began operating in July 2000 with a board of shareholders which comprised seven members, five from EADS and two from BAE Systems. In 2006 the company became wholly owned by EADS, after BAE Systems sold its 20 percent share (Airbus, n.d.d). Since January 2014, EADS changed his name in Airbus Group, which belongs to the Airbus SAS Company. An overview of the developments in the aviation industry is presented in Table 2.

Table 2. The evolution of European aviation industry (1967-2014)

Year	**The evolution of European aviation industry (1967-2014)**			
2014	**Airbus Group**			
2006 -2014	**European Aeronautic Defence and Space 100%**			
	France	Germany	Spain	
2000-2006	**European Aeronautic Defence and Space 80%**			**BAE Systems 20%**
	France	Germany	Spain	United Kingdom
1970-2000	**Economic Interest Group**			
1978	France 37,9 %	Germany 37,9 %	Spain 4,2 %	United Kingdom 20 %
1971-1978	France 47,9 %	Germany 47,9 %	Spain 4,2 %	
1970-1971	France 50 %		Germany 50 %	
1967-1970	**Memorandum of Understanding**			
1968-1971	France 50 %		Germany 50%	
1967-1968	France 37,5%	Germany 20%		United Kingdom 37.5 %

Source: adapted from Airbus, Historical documents

Currently, on civil transport aircraft market are competing two groups: European Airbus Group and Boeing, the result of a long process of consolidation in the USA.

► Strategies in the European aeronautical industry

By his multinational character, Airbus has been able to make use of different experiences, education, and ways of looking at things, which gave them a significant competitive advantage. To meet global competition, the group used a complex strategy of which stand out as important:

a) Technological innovation: implementing innovative products and technical solutions in order to win supremacy in the market. When other manufacturers have focused on three or four aircraft - engines, Airbus introduced the first twin-engine aircraft (Airbus, n.d.e). This aircraft has presumed low fuel consumption, efficiency operating cost and reduced external noise level, incorporating a new technology for landing with an enhanced comfort in the passenger's cabin and handling containerized cargo. New models have been launched over the years, based on A300 model, such as A310, which marked the beginning of the development of A320 "Airbus family", which incorporated for the first time the Fly by Wire (Airbus, n.d.f) replacing pulleys and cables with electric wire, followed by A330 family aircraft, A340, A350 and A380, plus military transport aircraft.
b) Organizational innovation. Alongside the gradual process of consolidation described previously, further actions were: the establishment of offices, training and spares centers in countries such as North America, China and Japan; (Airbus, n.d.g) simplifying the management structure by harmonizing procedures, methods and instruments across the enterprise based on best practices and expertise (Power8 restructuring plan); development of an efficient logistics system; development of its own business model, in which European partners and suppliers to develop

products and components for aircraft, and aircraft assembly to be made on a single final assembly line, given that the Airbus production network comprising worldwide final assembly lines for its commercial and military aircraft in France, Germany, Spain and China and a new line that will be opened in the United States; (Airbus, n.d.g)) establishing a financing company with headquarters in Dublin, Ireland, that provide credit facilities to help airlines to buy their aircraft and creation of financing schemes to its customers; (Airbus, n.d. h) development of alliances and concluding agreements of the joint-venture type such as the agreement with the Spanish government and Iberia Airlines company to put together farmers, oil refineries - and airlines to develop a complete Spanish "value chain" of sustainable and renewable fuel for aviation for commercial use and the framework agreement between Airbus Tianjin and China Aviation Industry Corporation in order to continue cooperation on the assembly line opened in China in 2008.

c) Involvement in the largest research programs and technology with European funding such as SESAR and Clean Sky. SESAR is a public-private partnership created to modernize the Air Traffic Management. Clean Sky mission (Bertolini et.al., 2012) is to develop innovative technologies to increase significantly the environmental performance of aircraft and air transport to achieve a quieter and more efficient aircraft in terms of fuel consumption. Clean Sky 2 is integrated in Horizon 2020 Program.

d) Environmental strategy: implementing of an Environmental Management System, of the ISO 14001 certification received in 2007 and renewed in 2010 and 2013, and the launch of the program in 2011 to reduce significantly the environmental impact until 2020 (Airbus, n.d.i). In addition to these actions, Airbus Group was involved in social responsibility programs, and the increase of their importance is demonstrated by the creation in 2008 of the Airbus Corporate Foundation.

► The performance of the European aviation industry

The process of consolidation and transformation into an integrated consortium led to improving results in the aviation industry. According to historical documents (Airbus, n.d.j) in the 1970 – 1980 period, Airbus managed to deliver 81 aircraft to 14 airlines, serving 100 different cities in 43 countries, reaching a market share of 26 percent. (Airbus, n.d.b). Between the year 1980 - 1996 the number of customers has increased almost nine times and the number of orders over fifteen times, representing a market share of 50%, as shown in Table 3.

Table 3. Airbus Market Evolution, 1980 - 1996

Item	**Year**	**Orders**	**Customers**
1	1980	133	14
2	1981	Peste 500	42
3	1984	411	50
4	1986	500	55
5	1988	900	74
6	1990	1700	over 100
7	1996	2004	124

Source: adapted from Airbus, Historical documents

The ascent continued after 2000 and was reflected in the number of customers and the turnover, as shown in Table 4.

Table 4. Airbus SAS Summary Results 2004 -2013

Item	**Year**	**Customers (number)**	**Employers (number)**	**Orders (number)**	**Revenues (in € million)**	**Productivity of labour (percent %)**
1	2004	204	110662	370	31761	0.29
2	2005	225	113210	1111	34206	0.30
3	2006	271	116805	824	39434	0.34
4	2007	287	116493	1458	39123	0.34
5	2008	306	118349	900	43265	0.37
6	2009	316	119506	310	42822	0.36
7	2010	323	121691	644	45752	0.38
8	2011	334	133115	1608	49128	0.37
9	2012	349	140405	914	56480	0.40
10	2013	365	144061	1619	59256	0.41

Source: adapted from Airbus (n.d.k) and Airbus (n.d.l)

The table shows that in the period 2004 – 2013 the number of customers has almost doubled, the number of orders increased more than fourfold, the turnover increased more than 1.8 times and the number of employees increased by approx. 1.30 times. Slower growth in the number of employees in relation to turnover indicates a growth in the labor productivity, with positive effects on competitiveness, evidenced by the figure 1:

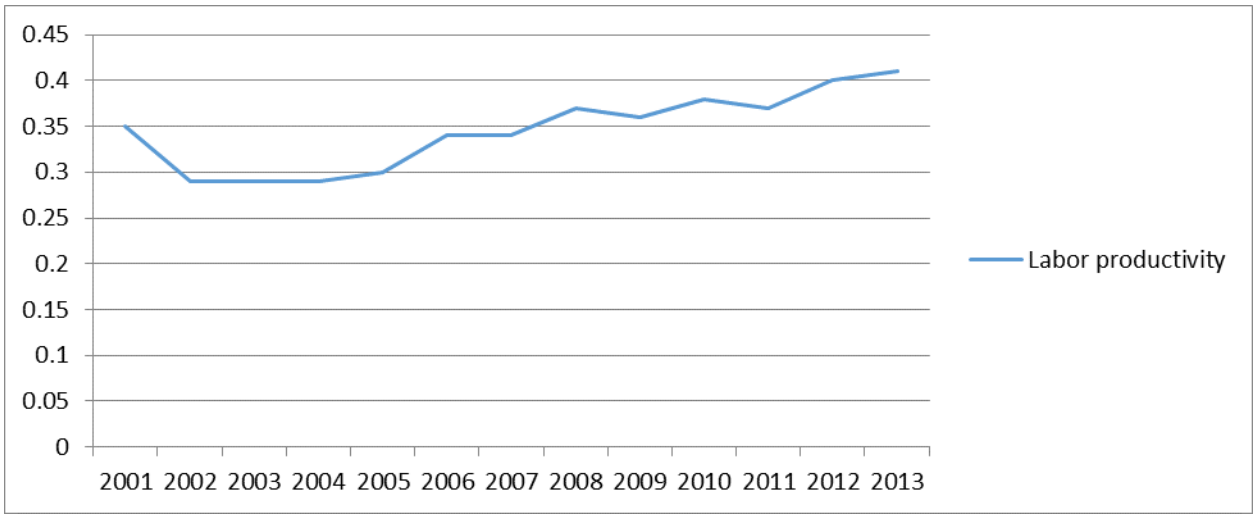

Figure 1. Labor Productivity in Airbus 2001-2013
Source: adapted from Airbus (n.d.k) and Airbus (n.d.l)

Figure 1 shows that the general tendency in productivity is increasing and this increase was slightly accentuated after 2011.

4. CONCLUSIONS

In this paper we had identified the principal means whereby european aeronautic industry has gradually gained market supremacy. The focus of the work on European region, started on one side from Romania's status as a EU member, and on the other hand from the majority's conclusion of specialized work that aviation industry is by excellence a geographically concentrated industry. Analysis of the evolution of the European aviation industry structure confirms that the industry is dominated by a few firms from five European countries. To meet global competition, the group used a complex of strategies of which the most important are technological innovation which presumed aircraft with low fuel consumption, efficiency operating cost and reduce external noise level, incorporating a new technology for landing with an enhanced comfort in the passengers cabin and handling containerized cargo; organizational innovation by establishing of office, training and spares centers in countries such as parts of North America, China and Japan; simplifying the management structure; development of an efficient logistics system; establishment a finance company that provide credit facilities to help airlines buying its planes and creation of a financing scheme for its customers; development of alliances and concluding agreements of type join-ventures such as the agreement with the Spanish government and airline Iberia Airlines to put together farmers, oil refineries – and airlines to develop a completely Spanish value chain of sustainable and renewable fuel aviation for commercial use; environmental strategy, Airbus became in 2007 the first company who received from International Organization for Standardization 14001 the environmental certification. The company also helped develop global cooperation and reducing the environmental impact of aviation, having a significant role in the research programs of the European Commission such as SESAR and Clean Sky. Gradual concentration and cooperation in various forms have increased market share of European aviation industry worldwide; environmental strategy. The company also helped develop global cooperation and reducing the environmental impact of aviation, having a significant role in the research programs of the European Commission such as SESAR and Clean Sky. The process of consolidation and transformation into an integrated consortium led to improving results in the aviation industry, which was reflected in the number of customers as well as in the turnover.

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