

The Impact of Globalization on European Airline Market

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Abstract. Airline industry is very important for modern society as the biggest player in the globalization process by connecting regions, promoting global trade and tourism, facilitating economic and social development. However, here is a lack of research on relationship between globalization and airline industry in Europe. It remains unclear how to measure the impact of globalization on performance of airline companies and industry. The article aims at investigation of the impact of globalization on operational and financial performance of European airlines before pandemics.

The authors applied a nonexperimental quantitative research design to analyze the relationship between independent globalization variables (level of globalization in Europe, globalization opportunity, globalization threat) and dependent airlines' operational and financial performance indicators. Research is done using secondary data from annual reports of 19 European airlines members of European Common Aviation Area (ECAA). The panel data analysis was applied for 2007–2017 with multiple regression analysis using STATA. The results show that globalization exerts a significant positive effect on operational performance. On financial performance only revenue per passenger kilometers is positively influenced by globalization. Globalization affects low-cost airlines and full-service airlines performance differently.

Keywords: Globalization, European airlines, low-cost carriers, full-service carriers, multiple regression, panel data.

1. Introduction

Many scholars are considering the globalization as a crucial force influencing the formation of new economic order. Countries take part to varying degrees in the process of globalization through expanding of economic ties with other countries and economic entities around the world. Globalization is accompanied by the change of role of institutions, society, business, state, international organizations etc. In this context, during recent years

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the debate about essence of the concept of globalization and its key characteristics has intensified in economic, sociological, and political literature. However, this discussion did not come to a logical conclusion in the form of an explicitly defined understanding of globalization's content and features which differ globalization from other phenomena characterizing the current trends of economy and society on a global level. Therefore, it is necessary to continue analysis of globalization, its features and impacts.

The interest in the impact of globalization on transport activities has been increasing recently. Globalization is a rapid multidimensional process that had a tremendous impact on business internationalization and international transportation of goods and people since 1980s. The importance of the globalization related issues in airline sector explains the fact, that this industry is very significant for contemporary society being the biggest contributor to enhancing connections among different regions and markets, supporting movement of goods and people across the borders. Airlines industry is very important for the creation and development European internal market. In 2018, this industry accounted for 9.4 million jobs in EU's overall employment and contributed €624 billion, or 4.2% to EU's GDP. Along with this, the air passenger demand has been steadily growing in average by 5% per year during the last 30 years and in 2018 stood at 802 million (ATAG, 2018).

The character of relationship between globalization and air transport industry has been the ground for extensive discussions. It cannot be argued that there is a unilateral direction of cause-effect relationships between them. On one hand, globalization in different areas such as legal liberalization, rapid development of tourism infrastructure, and high-speed train competition affects air transport considerably (Kalemba, 2017). Indeed, the liberalization of passenger air transport legislation have had a significant impact on the establishment of the basic conditions for its development and have caused an emergence of the business model called low-cost carrier (LCC), which implemented considerably more affordable airfares and made it possible for more people to travel.

On another hand, there is an opposite relationship as well: airlines catalyze globalization and spur social and economic development as is confirmed by Dharmawan (2012). From the economic point of view, the air transport industry creates jobs in the sector and is a significant taxpayer. As the demand for airline industry's services is constantly growing, there are many studies investigating the factors influencing passenger demand in air transport industry, particularly within Europe. The views of main aircraft manufacturers differ with Boeing emphasizing economic drivers, easy of travelling and local market conditions while Airbus stress GDP growth and market maturity (Boeing, 2016; Airbus, 2016). Airline sector in present status also has a big impact on globalization.

Although many studies analyzed the effects of globalization on companies and industries in general (Thoumrungroje, 2004; Kraemer et al., 2005; Thoumrungroje & Tansuhaj, 2007; Kalemba, 2017; Mahmutović et al., 2017), there is still an evident shortfall of empirical research on airline industry. Due to the lack of studies on globalization and airlines industry in Europe there are further issues to be unveiled like impact of globalization on airlines' performance; difference in impact of globalization on low-cost and full-service carriers, positive and negative impacts of globalization, solutions for different negative

impacts of globalization. Moreover, so far it generally remains unclear how to measure the impact of globalization on performance of airline company or industry. Taking into consideration these gaps, the main aim of the current research is to explore what impact globalization has on operational and financial performance of European airlines.

To reach the aim the following objectives were set – to identify the content and factors of globalization influencing airline company's performance; to analyze the development of the European airline industry in the process of globalization; to measure the impact of globalization on business performance of selected European airlines; to find out what impact each business model of airline has on their performance.

To measure the impact of globalization on business performance of selected European airlines a nonexperimental quantitative research was carried out. During analysis the relationship between independent globalization variables (the level of globalization, globalization opportunity, globalization threat) and dependent operational and financial airlines' performance indicators (available seat kilometer (ASK), load factor, number of passengers carried, costs per ASK, revenue per kilometer, yield, net profit margin, return on assets (ROA)) were studied. Secondary data from annual reports of 19 European airlines (members of European Common Aviation Area (ECAA)) and other sources was collected. As the research uses longitudinal data (2010–2017), a panel data model was applied with multiple regression analysis using STATA software.

The research starts with the literature review, where the concept of globalization of the European airline industry is presented and hypotheses and conceptual model are developed. In the next step the methodology of quantitative research is described. In the third phase the research results are analyzed with the aim to identify relationships between globalization and airlines' performance. In the last phase of study the conclusion are drawn.

The main hypotheses of the article relate to assumptions that globalization has an impact on operational and financial performance of European airlines.

2. Review of the literature on globalization

Globalization is a complex concept. Some authors understand globalization as a process. Boudreaux (2008) defines globalization as a process of interaction and integration among the people, companies, and governments which is driven by international trade and investment and aided by information technology. Mahmutović et al., (2017) emphasize increasing interconnectedness of the world's countries, which has brought about a huge reduction in transport and communication costs and removed barriers to the flow of goods, services, capital, knowledge and people across borders.

Some authors put emphasis on information flow as a main feature of globalization. Tomlinson (1999) underlines opportunity to get information about events around the world, which is an important aspect in the context of innovation and investment activities while Willenius (1998) characterizes new economy in terms of information, knowledge, information technology, which are main sources of growth, productivity and competitiveness.

Most researchers understand the globalization as a complex phenomenon. Thoumrungrroje (2004), Thoumrungrroje & Tansuhaj (2007) see the globalization as the process

of increasing social and cultural interconnectedness, political interdependence, and economic, financial and market integrations that are driven by advances in communication and transportation technologies, and trade liberalization. Gunter & van der Hoeven (2004) in defining globalization stress the integration of world economy and community into one whole affected by new technologies, new economic relations, as well as relevant national and international policies implemented by national governments, international organizations, business circles and civil society institutions.

Skeptics (Cidell 2006; Wood, 2008) hold that globalization is not a new process in world development while globalists argue about uniqueness of globalization phenomenon, which is occurring due to technology development and integration of national economies into a single space (Wood, 2008).

Economic globalization being a principal form of globalization is understood through three factors:

- formation of new type of world market characterized by increasing of capital and labor movement, international trade due to reduction of barriers (Cidell 2006; Sallah & Cooper, 2008; Wood, 2008; Rifai, 2013), and knowledge economy, which means growing dependence on information technology development (Wood, 2008);
- emergence and increasing influence of multinational corporations (Sallah & Cooper, 2008; Wood, 2008; Rifai, 2013);
- increasing power of international organizations, such as World Trade Organization, International Monetary Fund and World Bank, which control main capital flows in the global free market (Rifai, 2013; Mahmutović et al., 2017).

Different indexes are used to measure the level of globalization of different countries, such as Kearney Globalization Index, KOF Globalization Index, Bertelsmann Stiftung Globalization Index, Ernst & Young Index and DHL Connectedness Index (table 3).

Table 1. Globalization Indexes

Factor	KOF Index of Globalization	Bertelsmann Globalization Index	E&Y Globalization Index	Kearney Globalization Index	DHL Connectedness Index
First measurement	1970	1990	2009	1998	2001
Latest measurement	2019	2018	2012	2007	2019
Dimensions of globalization	Economic, political, social	Economic, political, social	Trade, capital, technology, culture, labor	Economic, technology, personal contacts, political	Trade, capital, information, people
Indicators	23	11	–	13	12
Countries	207	45	60	72	169
Scale	1–100	1–100	0–10	0–1	0–100
Leader	Switzerland	Netherlands	Hong Kong	Singapore	Netherlands

Source: created by the authors based on Dreher, 2006; Kearney, 2009; Böhmer, 2016; Ernst & Young, 2016; Altman et al., 2018

Most indexes are permanently updated with exception Kearney Globalization Index which was not updated since 2007 and E&Y which was calculate only for 2012. The most popular index for measurement of globalization is KOF Globalization index created by ETH Zurich. As the latest update of KOF Globalization index indicates, the European countries are the most globalized in the world.

Modern literature devotes a lot of attention to the impact of globalization on business performance. In the past two decades the world has gone through globalization process which significantly affected businesses as companies are leaving their home markets and becoming international to survive in new market conditions.

An important role of globalization for business companies was noticed by many authors (Thoumrunroje & Tansuhaj, 2007; Ristovska & Ristovska, 2014), however, some authors (Thoumrunroje, 2004; Mahmutović et al., 2017) find a lack of studies in this area disclosing the need for further research of the interaction of globalization and company.

Ristovska & Ristovska (2014) identified six specific globalization factors having impact on business development:

- political changes – emergence of preferential trade agreements and international grouping (EU, USMCA), resulting in a single market and reducing trade barriers;
- international business climate;
- market development – development of new technologies, international tourism, cultural exchange contributes to appearance of new customers;
- expenses – due to the need to launch new products and invest in R&D, companies have to cut expenses to be competitive; for this reason, companies locate production in countries with low cost of production;
- competition – because of easy access to new geographical markets, competition is constantly growing;
- development of technology – new communication technologies enable intense exchange of ideas across borders; due to internet it is possible for smaller companies to compete globally, regardless of geographical location of client; development of transport technologies makes the world closer, connecting countries around the world.

Many authors confirmed that advances in transportation are a crucial consequence of globalization, which radically changed a way of doing business (Thoumrunroje, 2004; Thoumrunroje & Tansuhaj, 2007; Čiarnienė & Kumpikaitė, 2008) and contributed to globalization intensity.

Previous empirical researches disclosed that there are two primary impacts of globalization on companies: global opportunities and global threats. Positive signs of the globalization according to Mahmutović et al. (2017) are related to the ability of companies to acquire resources (raw materials, knowledge, capital) from anywhere, distributing different business activities abroad and using cheaper workforce to obtain competitive advantage. Supporting this, Ristovska & Ristovska (2014) noticed that the globalization made it easier to access new sources, new knowledge and technologies and markets. Indeed, due to the decrease in trade barriers, trade in goods and services between countries is increasing constantly and companies grow in new geographical areas. Also, as money flows across

boundaries have become freer, investors from around the world seek investments abroad for attractive companies with favorable ROI. Finally, the globalization allows companies to reduce costs finding suppliers from different countries to get competitive advantages based on national differences in price and quality to compete more efficiently (Ristovska & Ristovska, 2014).

Along with this, the globalization creates risks and threats for companies, such as intensive competition, as they need fight for survival and strengthen position on the market innovating and expanding geographical presence (Ristovska & Ristovska, 2014; Mahmutović et al., 2017). Moreover, companies are subject to other negative impacts such as global crisis: instability in employment, production, banking system in one region could spread quickly to another one, which is located thousands kilometers away (Mahmutović et al., 2017). Lopatina (2012) called globalization in general as a risk for companies, constituting financial, operational, and strategic and hazard risks. World Economic Forum (2016) in Global Risk Report distinguished five groups of globalization risks for business, namely economic, geopolitical, environmental, societal and technological with the most crucial risk on business activities being economic.

3. Globalization in the European airline industry

Airline industry is very important for contemporary society being the biggest contributor to connecting markets, facilitating global trade, bolstering the tourism industry, causing social growth (Kotze, 2017). Air transportation has become the most significant, reliable and fastest means of transport, driven by globalization (Oktal et al., 2006). Until pandemic, airline business prospects were quite optimistic: airline passenger traffic was expected to grow by an average annual rate of 4.6% over the next 20 years (Boeing, 2019).

Moreover, airline industry plays a vital role in the creation of European economy (Kalemba, 2017). The interest in European airline market is constantly growing (Goetz & Graham, 2004; Diaconu, 2012; Vidovic et al, 2013; Kraft & Havlikova, 2016), as it is a successful example of liberalized aviation space (a single European aviation market), causing emergence of the best low-cost airlines (Ryanair, Wizzair, Euro Wings) and oldest and biggest full-service airlines (KLM, Lufthansa).

Dobruszkes (2013) defined LCCs as key drivers of air travel demand. Dobruszkes & Mondou (2013) concluded, that emergence of LCCs has resulted in an undoubtedly positive effect on tourism boom. To confirm this, Jones Lang LaSalle Hotels' research demonstrates that LCCs contribute to tourism demand in Europe and potentially occupancy in hotels. Destinations not served by LCCs will most likely face tourism demand decrease (Jones Lang LaSalle Hotels, 2006). According to Goetz & Graham (2004), the combination of airline strategic alliances such as Star Alliance, Oneworld, Sky Teams, and network restructuring is the most potent manifestation of globalization processes in the airline industry.

Airline industry is an extremely unique industry because being a direct result of globalization, it contributes to creation of the world we know today: without airline industry

tourism and leisure sector would not develop so fast and it would be harder to run international business (Tiernan et al., 2008). According to IATA 2018 Report the European air passenger market is the second largest in the world (26.2 %), following by Asian (37.1 %) but overtaking American (22.6 %). The main driver of the European airline sector is the EU aviation strategy adopted in 2015 which has to provide to airlines an access to all world destinations. As a result, the annual 5% growth is expected in the European airline industry by 2030 (ATAG, 2018).

Different researches argue that the globalization caused crucial changes in airline industry. The globalization influenced not just the demand for international air transport (its scope, nature and geography) but also the supply and the environment in which air transportation services are provided (OECD, 2010). Cidell (2006) pointed out three key processes of globalization that had the biggest impact on air transportation: increase in trade, technological improvements and liberalization.

Many authors noticed the essential role of technology development in passenger airline industry which now is one of the most technologically dependent businesses globally (Drummond, 2015). Cidell (2006) emphasized that investments in development of transport technologies caused reduction of “the transactional space and enabled extended exploitation of the comparative advantages of space in terms of resources, capital and labor”. He calls the invention of jet engine as one of the technological improvements that contributed to globalization the most. Another key direction of technology development in the industry is efficient fuel consumption that is also correlated with the global trend of reduction of negative impact on the environment.

Due to global concerns on climate change airlines are keen to create energy-efficient innovation and implement them in business operations. Application of internet technologies in business operations of airlines affected their performance significantly. Kraemer et al. (2005) identified 4 components in airlines activities, which were affected by internet (efficiency, complementarities, lock-in, and novelty).

Woodburn et al. (2008) argued that globalization has affected the transportation sector in two different aspects: development of international trade and business and removal of barriers between European countries. Oktal et al. (2006) called globalization, including deregulation and reduction of airfares, along with rising GDP and living standards, as a main driver of airline industry development. Goetz & Graham (2004) said that the most important manifestation of globalization in the airline industry is the combination of airline strategic alliances and network restructuring. Dobruszkes & Mondou (2013) in their turn said that establishment of strategic alliances between airlines like Star Alliance is a response of industry to the globalization process. Kalemba (2017) describes globalization through deregulation, open sky policy, changes in the tourism, new revenue management policies, strategic alliances, establishment of new business models of air carriers (LCCs), and high-speed train competition

Liberalization and deregulation as globalization’s manifestations were the main forces which shaped the global airline industry. Contrary to deregulation in the US, deregulation in the EU was adopted in 1980s under the term “liberalization”. Mootien (2012) argued

that the term of deregulation was changed in Europe's case, as the Europeans wanted to proceed own processes originally and in a systematic way. Liberalized market is characterized by less and simpler regulations to increase efficiency and protect consumers' rights.

In the EU, the first liberalization package envisaged a step by step deregulation introduced in 1987. Dudek & Hawlena (2013) argued that the European liberalization process had been implemented over the long period by stages (three liberalization packages in 1987, 1990 and 1992). Some of authors (Dudek & Hawlena, 2013; Norwegian Ministry of Transport and Communications, 2016) emphasized the importance of the third liberalization package which finally abolished all obstacles for open competition. In 1992, the liberalization was completed with the creation of the single liberal airline market that opened new opportunities for the European air carriers to operate on any route within the EU and to use own tariffs causing an increase in the intensity of competition (Dudek & Hawlena, 2013).

The previous studies distinguished some consequences of liberalization for European airlines market:

1. Liberalization caused an intensified competition (Diaconu, 2012) due to emergence and development of low-cost carriers (Dobruszkes, 2013; Dudek & Hawlena, 2013).
2. Essential development of airlines' network and decline of airfares (Dobruszkes, 2013; Dobruszkes & Mondou, 2013; Lieshout et al., 2016).
3. Shift from bilateral agreements to "open sky" agreements establishing business alliances between airlines removing any control of rates and airfares (Cidell, 2006; Mootien, 2012). Thus, airlines, especially full-service carriers, create alliances to survive in highly competitive environment with the purpose to reduce the costs in maintenance of sales offices and facilities, personnel costs.

Continuous growth in air passenger traffic during last years in average by 5% raised researchers' interest to identify factors influencing the rise of air passenger demand in order to understand travel conduct and expected passenger traffic that is crucial for planning pricing strategies, fleet utilization and airline's corporate success in general (Grosche et al., 2007; Kluge & Paul 2017).

Boeing and Airbus in 2016 conducted researches results of which demonstrated that the key factor for rise of demand were the growth in GDP and income level (Boeing, 2016; Airbus 2016). Other factors discovered are market maturity, easy of travelling (including visa restrictions, emerging of new business models of airline companies and market regulations) and local market conditions.

Another study on air travel demand made by Kluge & Paul (2017) applying dynamic panel data models for eight regions including Europe along with GDP growth identified such drivers as jet-fuel price (affecting airfare) and external shocks. Supporting findings of this research Wadud (2014) proved that people react differently to fuel price increases and decreases. Also, Kluge & Paul (2017) determined that external shocks, especially terrorist attacks, influence a fall in air passenger traffic.

Kluge & Paul (2017) added completely different factors having impact on air travel, such as population size, age of passengers and education. They found out that more than

50% of European travelers belong to the working age groups of 25–44 and 45–64 years. Regarding education, they observed that 71% of clients of the European airline companies have a tertiary education.

Kluge & Paul (2017) who explored demand drivers in the Swedish airline market found a high impact of GDP and income, Department of Transport in UK (2013), using econometric models, discovered the impact of income and airfare in the UK. Study of Dargay & Hanly (Kluge & Paul, 2017) confirmed that demand was driven by airfare, income, trade (only for business air travel) and exchange rates (findings also supported by Dobruszkes, 2013). They also argued that macroeconomic factors such as exchange rate have impact on demand, too.

4. Globalization and new business models of airlines

One of the most essential consequences of globalization in airline industry is an establishment of new business model based on higher levels of operational efficiency with low fares, namely – low cost carriers (LCCs). This concept was introduced in 1960s with appearance of Southwest Airlines in the US and today there are a number of LCCs in many regions worldwide (Macário and Reis, 2011; Dobruszkes, 2013). Originally, the main idea was to provide fewer services for a cheaper price through a variety of operational processes that offer cost advantages to a LCC as opposed to full-service carriers (Schlumberger & Weisskopf, 2014).

In Europe, this model was adopted only in 1995 by Irish airline Ryanair and later by Easy Jet (Dobruszkes, 2013). Today LCCs occupy a substantial part of the passenger airline industry both in the USA and Europe, being strong competitors of full-service carriers (Dobruszkes, 2013). In 2018, there were around 49 LCCs worldwide having market share of 30% (Mazareanu, 2020). Boeing (2019) reports that in terms of regional aspect, LCCs have possibly had the biggest impact precisely on the European airline market, where they demonstrate significant increase from 2% in 1998 to over 33% currently of all passenger flights, while the growth of the FSCs has been stagnant.

There is a common agreement that LCCs are key drivers of the European airline industry (European Union Committee of the Regions, 2004; Diaconu, 2012; Dobruszkes, 2013; Dobruszkes & Mondou, 2013; Boeing, 2019), as they transform airline market, making flying cheaper than driving and causes a considerable growth of passenger traffic.

There is still no commonly agreed definition of a low-cost carrier and its characteristics. The first attempt to develop low-cost airline business model was done by Franke (Lieshout et al., 2016) who suggested that when LCCs access to the market offering lower fares, air service supply grows and consequently modifies the demand. The provision of low-price travel possibilities is one of the most significant consequences of low-cost airlines to the people mobility, which contributes to connectivity between regions. In a more precise way an LCC was defined by Cidell (2006) as an airline developed to have a competitive edge regarding costs over an FSC. Budd et al. (2014) defined an LCC through its attri-

butes: low-cost airline can be differed from other airlines by following cost minimization strategies such as reducing maintenance and training costs, ease scheduling, using mostly a single type of aircraft. LCCs are also described by some basic characteristics such as limited customer services (free baggage, catering), operating to secondary airports due to lower price, using short-haul and point-to-point routes instead of the hub-and-spoke model, direct ticket sales through internet avoiding payments to travel agencies etc. (Reichmuth et al., 2008; Dobruszkes, 2013; Schlumberger & Weisskopf, 2014). Thus, despite the fact that there is no agreement in definition of LCCs, there is a common understanding of what these airlines are.

According to the study results (Martin & Roman, 2010; Dobruszkes, 2013; Kotze, 2017) the key factor of the LCC business model is usage of the cost reduction strategy. These basic cost reduction substrategies include fuel cost reduction, employee productivity improvement, flight operations and aircraft maintenance cost reduction, operating procedure simplification (Tekiner et al., 2009; Martin & Roman, 2010; Chang & Shao, 2011; Dobruszkes, 2013).

Recently it has been noticed, that more and more LCCs have started establishing themselves in large European airports (Schlumberger & Weisskopf, 2014). Budd et al. (2014) also suggest that one of the most distinguished recent features of LCCs are commercial partnerships with third-party companies, such as accommodation providers or car-rent firms. In addition, new LCCs tend to implement differentiation strategy, which means that airline seeks to be unique among competitors promoting services highly valued by buyers (Budd et al., 2014).

Many studies were devoted to the competition between LCCs and FSCs (Martin & Roman, 2010; Dobruszkes, 2013; Lieshout et al., 2016), pricing strategies and sales revenue management (Dobruszkes, 2013; Budd et al., 2014) and passenger experience of using low-cost airlines for travelling (Lieshout et al., 2016).

Many studies demonstrated a significant impact of LCCs on business trends, migration and tourism. For instance, the study of Dobruszkes (2013) on West–East European routes demonstrated that this low-cost market is still a periphery but thanks to LCCs the rapid growth is possible. Focusing on Italy, Dobruszkes (2013) found out that many regional airports have experienced high increase in passenger traffic owing to low-cost airlines.

Despite that numbers of studies are increasing there are still a lot of gaps in research of low-cost airlines in European countries. Moreover, there are no systematized contemporary empirical studies about impact of globalization on European low-cost airlines.

The deregulation of airline industry gave rise also to the full-service airline business model which provides a broad spectrum of pre-flight and onboard service options, proposing different classes of serving and connecting flights (Reichmuth et al., 2008). This is a basis for FSCs hub and spoke system, which, according to Cook & Goodwin (2008), allows “all passengers expect those whose origin or destination is the hub, transfer at the hub for an additional flight to their final destination”. Thus, this business model involves long-haul, regional and domestic flights, that explains the utilization of several aircraft models (Vidovic et al., 2013).

There are few examples of clear definitions of this business model of airlines. For instance, Cidell (2006) defines the FSC as an airline created on the basis of the former state-owned carrier owing to the deregulation process of airline market. Budd et al. (2014) highlighted additional characteristics of FSCs, such as a broad range of destinations with wide network of services, strong focus on service quality: continuous improvement of flight scheduling, baggage tracking and increase capacity. Special attention is given to customer relationship management which includes loyalty programs, making value for travelers due to the network of destinations and frequency of service. One more essential characteristic of an FSC is application of numerous sales channels (Cidell, 2006). FSCs follow the differentiation strategy which means operating on a broad scope and offering unique for industry service highly valued by customers (Kotze, 2017).

The emergence of LCCs caused significant increase of competition on airline market that creates the need to conduct researches comparing both airline models. Cooperation and competition between LCCs and FSCs were studied by Gilen and Morrison (2003). This study notes only a partial competition despite completely different characteristics of business models. Another study (Baker, 2013) explores the service quality in both models of airlines. The results demonstrated that competition between two models presses on LCCs to improve their service quality. It was noticed that in the 2007–2011 period the quality of LCC services was higher than in some traditional FSCs. Stoenescu & Gheorghe (2017) compared main factors influencing passenger's decision to select one or another airline type and found out that while the crucial factors in choosing an LCC are the price level and the direct flights, FSCs are mainly used due to the airport location, the progressed ticketing advantages, interline agreements, and the services offered.

Studies indicate that the FSC and LCC airline models are completely different. Emergence of LCCs in airline market caused significant changes for FSCs as it was necessary to adopt new price policies and lower fares that consequently removed boundaries between concepts of FSCs and LCCs creating airline companies in between. New hybrid airlines combine characteristics of both models of airlines and they adapt quickly to the market. A hybrid airline provides more services for passenger in comparison to an LLC, e.g., leg space, two passenger classes, entertainment on board as well as Wi-Fi and loyalty program (Vidovic et al, 2013). Some hybrid airlines have the partnerships with big airlines in expanding their flight network.

5. Research Methodology and Data

To reach the main aim of the research – to investigate the impact of globalization on European airline companies, a **nonexperimental** quantitative study was conducted applying a **panel data design**, which includes yearly observations of European airlines collected for the 2007–2017 period. Airlines created in the countries of ECAA are considered in this research as *European*. 19 European airlines are included into the sample: 10 FSCs – Aegean Airlines, Air Lingus, Austrian airlines, British Airways, Finnair, Iberia, KLM, Lufthansa Passenger Airlines, Scandinavian Airlines (SAS), Tap Air Portugal; and 9 LCCs – Easy Jet, Eurowings, Flybe, Jet2.com, Norwegian, Ryanair, Transavia, Vueling, Wizz Air.

Variables selected for the research are described in the table 2. The level of globalization in Europe is measured using **KOF globalization index** as an independent variable. In addition, taking into account previous researches (Thoumrungroje, 2004; Kraemer et al., 2005; Thoumrungroje & Tansuhaj, 2007; Kalembe, 2017; Mahmutović et al., 2017), the effect of globalization on companies is expressed through **globalization opportunity** and **globalization threat**, they are also considered as independent variables. Globalization opportunity is expressed in numbers of destinations served (DS) by airlines while globalization threat is measured as an intensity of competition and expressed as Herfindahl–Hirschman Index (HHI). Organizational performance of airlines includes operational and financial indicators, which are dependent variables. Operational performance will be measured using ASK, LF, CASK, PAX indicators, while financial performance will be assessed applying RPK, yield, NPM and ROA indicators (see table 2). To determine if there are differences in the results for LCCs and FSCs, business model of airline as a moderator variable is included into research.

The relationship between globalization variables (globalization opportunity and globalization threat) and business performance variables in the economic literature is unexplored yet and the research seeks to eliminate and empirically prove or defuse these links.

Table 2. Research variables

Variable	Type	Source
Level of globalization	Independent	KOF Globalization index
Globalization opportunity	Independent	Market reports, annual reports, CAPA data
Globalization threat	Independent	Own calculations of HHI based on data from annual reports
Available seat kilometer (ASK)	Dependent	Annual report of airline
Load factor	Dependent	Annual report of airline
Passenger carried (PAX)	Dependent	Annual report of airline
Revenue per passenger kilometer (RPK)	Dependent	Annual report of airline
Cost per Available seat kilometer (CASK)	Dependent	Annual report of airline
Yield	Dependent	Annual report of airline
Return on Assets (ROA)	Dependent	Annual report of airline
Net profit margin (NPM)	Dependent	Annual report of airline
Business model of airline	Moderator	-

Source: created by the authors

Data with variables were collected from multiple **secondary data sources**. To measure the level of globalization in Europe the average value of KOF globalization index for 2007–2017 among ECAA countries was used. Quasi-HHI indexes were calculated for the 2007–2017 period based on the market shares of selected airlines. Other variables for 2007–2017 were obtained from annual reports available on companies' websites.

Four groups of hypotheses were formulated to attain the tasks of research. Each hypothesis was aimed at measuring the relationship between globalization indicators and airline's performance indicators (operational and financial) in Europe (table 3).

Table 3. List of hypotheses

Hypothesis	Sub-hypothesis
H ₁ . Globalization affects on operational performance of European airlines	H _{1.1} . There is a positive relationship between globalization and ASK. H _{1.2} . There is a positive relationship between globalization and load factor. H _{1.3} . There is a positive relationship between globalization and the number of passengers carried. H _{1.4} . There is a positive relationship between globalization and cost per ASK.
H ₂ . Globalization affects on financial performance of European airlines	H _{2.1} . There is a positive relationship between globalization and revenue per kilometer. H _{2.2} . There is a positive relationship between globalization and yield. H _{2.3} . There is a positive relationship between globalization and net profit margin. H _{2.4} . There is a positive relationship between globalization and return on assets.
H ₃ . Type of airline business model affects impact of globalization on operational performance of airlines	
H ₄ . Type of airline business model affects impact of globalization on financial performance of airlines	

Source: created by the authors

As the panel data estimation is conducted to achieve the main research aim, the Hausman test was performed to find out whether fixed or random effect would be appropriate. A high value of the Hausman test ($p\text{-value} > 0.05$) suggested that random effect (GLS) is the most adequate for dependent variables which was proved by the Lagrange Multiplier test. Studying cases of LCCs and FSCs separately, it can be seen, that the random effects model is appropriate for all models in case of LCCs as well as FSCs, except for LF as an independent variable in case of FSCs: the Hausman test identified a significant fixed effect.

Before running the multiple regressions to test hypothesis, assumptions for linearity, normality, homoscedasticity and multicollinearity have been tested. All calculations have been processed by **STATA** statistical software.

The table 3 demonstrates the data summary for 209 observations over the 11-year period (2007–2017) including mean, standard deviation, maximum, minimum for all independent, dependent and mediator variables studied.

Analysis of independent variables indicated an increase in the level of globalization in Europe over the 11-year period. The average level of competition in the European airline industry is 382.56 and this demonstrates a strong competition in the industry as HHI is less than 1500, that is in line with Yasar & Kiraci (2017). The average level of profitability of airlines (2.49%) is below of a generally appropriate average level at 4%. Some companies have a negative profit margin with the worst result being shown by Austrian Airlines in 2008 (–17%) while the profitability of Ryanair in 2016 was 24%. The low mean of ROA (2.21%) could be explained by large assets of airlines.

Table 3. Descriptive statistics

Variable	Obs	Mean	Std Dev	Minimum	Maximum
Independent variables					
KOF	209	81.37	0.71	80.50	82.50
HHI	209	382.56	64.57	272.30	465.29
DS	209	105.23	47.37	21.00	258.00
Dependent variables					
ASK	209	48.60	49.16	5.00	202.30
LF	209	79.92	6.25	62.00	94.00
PAX	209	23.13	22.24	3.10	120.00
RPK	209	40.70	41.60	3.40	162.20
NPM	209	2.49	6.34	-17.00	24.00
ROA	209	2.21	5.84	-20.00	18.00
CASK	209	6.50	2.31	2.00	13.67
Yield	209	7.47	2.73	1.31	14.00
Moderator variable					
Model	209	0.47	0.50	0	1

Source: created by the authors

To find out if the type of business model affects the impact of globalization on airline's performance, the collected data was studied separately for LCCs and FSCs. The research revealed that:

- FSCs serve broader geography of destinations than LCCs,
- it is characteristic for LCCs to expand their capacity adding more seats,
- average ASK of FSCs is higher than of LCCs.

Some research results are similar to earlier findings of other authors:

- there is no big difference in average load factors, nor in the extremes (Demydyuk, 2011);
- in terms of profitability, LCCs are much more efficient than FSCs, with the highest level of profitability demonstrated by Ryanair (Demydyuk, 2011);
- LCCs are profitable despite lower yield which is compensated by high load factor (Demydyuk, 2011; Dobruszkes, 2013).

6. Empirical Results and Discussion

Table 4 demonstrates results of the random effect regressions for operational and financial dependent variables: coefficients, p-values, R-squared and F-statistics.

Regarding operational performance, results from the multiple regression (table 4) demonstrate a significant positive impact of the level of globalization in Europe (KOF globalization index) ($p < 0.05$) on airlines' capacity (ASK) while the number of destinations

served by airlines affects ASK as well ($p < 0.05$). This indicates that the increase in the level of globalization in Europe by 1 point leads to the growth of airlines' capacity by 5.52 bln. seat-km while the expansion of the geography of flights by 1 destination leads to the increase of ASK by 0.19 bln. seat-km. At the same time a high p-value of the level of competition (0.459) implies that HHI has no significant effect on ASK meaning that competition in the airline industry does not affect airlines' capacity. R-square of the model is 0.471 which means that 47% of the variance in ASK is explained by globalization. These results support $H_{1,1}$ – globalization has a positive impact on European airlines capacity (ASK).

Table 4. Results from the multiple regression for impact of globalization on airlines' operational and financial performance

Independent variables	Model 1 – ASK	Model 2 – LF	Model 3 – PAX	Model 4 – CASK	Model 5 – RPK	Model 6 – NPM	Model 7 – ROA	Model 8 – yield
KOF	5.516 (0.000)	2.111 (0.000)	1.767 (0.091)	-0.226 (0.191)	5.708 (0.000)	2.623 (0.002)	2.127 (0.009)	-0.198 (0.253)
HHI	0.010 (0.459)	0.010 (0.008)	0.011 (0.285)	0.002 (0.261)	0.016 (0.231)	-0.014 (0.125)	-0.008 (0.367)	-0.001 (0.698)
DS	0.190 (0.000)	0.029 (0.001)	0.168 (0.000)	-0.001 (0.895)	0.173 (0.000)	0.172 (0.244)	0.011 (0.393)	0.003 (0.528)
Observations	209	209	209	209	209	209	209	209
R-squared	0.471	0.156	0.589	0.002	0.454	0.089	0.060	0.038
F-value	0.000	0.000	0.000	0.510	0.000	0.000	0.002	0.246

Source: created by the authors

For load factor all independent globalization variables are significant, as p -value < 0.05 , and have positive effect, that proves $H_{1,2}$ – there is a positive relationship between globalization and load factor. The growth of KOF index, the level of competition and extension of flights network lead to increase of load factor, however, globalization explains only 15.6% of the total variance in load factor, indicating that other variables affect the load factor more. Due to this, $H_{1,2}$ is only partially accepted.

Direct positive and significant impact of globalization (number of destinations served, KOF globalization index) is observed on the number of passengers (PAX), while impact of competition is insignificant (p -value > 0.05). These results indicate that the growth of the level of globalization by 1 point causes increase of passenger traffic by 1.77 mln. passengers while increase in the numbers of destinations served by 1 destination leads to the increase of PAX by 0.17 mln. passengers. Globalization explains 59% of the total variance in the number of carried passengers that allows accepting $H_{1,3}$ – there is a positive impact of globalization on the number of passengers carried by European airlines.

The regression results demonstrate that the increase in globalization leads to the reduction of unit costs. This means that the higher level of globalization in Europe, the wider

geography of served destinations, the lower level of competition in the European airline industry, the lower CASK. Due to low R-squared (0.002) and insignificance of globalization variables for CASK (p -value >0.05), $H_{1,4}$ cannot be supported.

Regarding financial performance, the regression results demonstrate that positive impact of KOF globalization index and the number of destinations served by airlines for RPK is significant ($p < 0.05$), while the level of competition in the industry is not ($p > 0.05$). Thus, the increase of KOF globalization index by 1% and the number of served destinations by 1 destination cause the growth of RPK (5.71 bln. EUR-km and 0.17 bln. EUR-km, respectively). The high R-squared (45.4%) are in line with $H_{2,1}$ – there is a positive relationship between globalization and RPK. Due to low R-squared of the regression models, where NPM, ROA and yield are dependent variables (0.089, 0.06 and 0.04, respectively), the variances of these variables are not explained by globalization, therefore $H_{2,2}$, $H_{2,3}$, $H_{2,4}$ are not supported by the regression results.

In conclusion, research demonstrates that the globalization in the ECAA countries has a positive impact on such operational performance indicators as ASK (available seat kilometers), and PAX (number of carried passengers). The multiple regression results demonstrated the significant positive effect of the level of globalization in Europe and globalization opportunity on airlines' capacity (ASK). The same trend was observed for the number of passengers carried by European airlines (PAX): the growth of the level of globalization and the number of served destinations caused an increase in passenger traffic. However, the impact of globalization on load factor is small, while CASK cannot be explained by globalization.

Among financial performance indicators only RPK (revenue per passenger kilometer) is positively affected by globalization. Also, it is observed that the impact of globalization on airlines profitability and return of assets is statistically significant but weak (R-squared is low). But according to the multiple regression results, globalization does not impact airlines' yield while the impact of globalization on NPM and ROA is only partial. Hence, the globalization does not affect the financial performance of European airlines considerably.

A comparative analysis of **operational performance of European LCCs and FSCs** demonstrates that patterns of the multiple regression results for LCCs do not differ much from the whole sample (table 5), however, some differences between LCCs and FSCs exist. First of all, it is observed that R-squared of LCCs' ASK model is higher in comparison to FSCs' (0.59 against 0.41). This demonstrates a stronger effect of globalization on the capacity of LCCs. To illustrate, the increase in globalization level in the ECAA countries provokes the growth of LCCs' capacity by 7.5 bln. seat-km whereas FSCs' capacity increases only by 4.34 bln. seat-km. Second, all independent variables (the growth of globalization level, intensified competition and extension of geography of flight) cause the increase of load factor in FSCs. This indicates that the impact of globalization on FSCs' load factor is stronger than on LCCs' one as 30.2% of the load factor variance is explained by globalization. This supports $H_{1,2}$ for full-service carriers. Third, only the number of served destinations is significant for PAX in FSCs – adding 1 destination to geography of FSCs' flights lead to the increase in number of carried passengers by

0.12 mln. Furthermore, R-squared for FSCs is higher than for LCCs (R -squared 73.1% against 59.7%) and this means a strong effect of globalization. For LCCs, both the level of globalization and the number of served destinations have a significant impact on PAX. These differences indicate that the type of airline business model can have an impact of globalization on operational performance of airlines (support for H₃).

Table 5. Results from the multiple regression for impact of globalization on LCCs' and FSCs' operational performance

Independent variables	LCCs				FSCs			
	Model 1 – ASK	Model 2 – LF	Model 3 – PAX	Model 4 – CASK	Model 1 – ASK	Model 2 – LF*	Model 3 – PAX	Model 4 – CASK
KOF	7.500 (0.000)	3.294 (0.000)	4.520 (0.011)	-0.040 (0.851)	4.384 (0.014)	1.131 (0.011)	-0.566 (0.608)	-0.279 (0.283)
HHI	0.006 (0.766)	0.005 (0.399)	0.002 (0.925)	0.004 (0.039)	0.011 (0.522)	0.016 (0.000)	0.017 (0.127)	0.000 (0.956)
DS	0.222 (0.000)	0.115 (0.452)	0.201 (0.000)	-0.005 (0.350)	0.107 (0.019)	0.460 (0.000)	0.115 (0.000)	-0.003 (0.675)
Observations	99	99	99	99	110	110	110	110
R-squared	0.589	0.160	0.597	0.040	0.406	0.302	0.731	0.006
F-value	0.000	0.000	0.000	0.123	0.000	0.000	0.000	0.242

* -fixed effects model

Source: created by the authors

Regarding **financial performance** indicators (Table 6), unlike to FSCs' sample, a moderate significant impact of globalization on LCCs' profitability is determined (R-squared 0.25 against 0.13) – 25% of low-costs' NPM variances is explained by globalization. The greater is the number of served destinations, the higher is LCCs' profitability while KOF globalization index and level of competition are insignificant for NPM. This difference allows accepting H₄ – globalization affects financial performance of LCCs and FSCs differently.

To sum up, the globalization effect on LCCs and FSCs is diverse indicating that business model of airlines can change the impact of globalization on operational and financial performance. Multiple regression models run separately for the LCCs and FSCs subsamples identified the following differences between FSCs and LCCs. First, it is observed that R-squared of LCCs' ASK model is higher in comparison to FSCs' one demonstrating a stronger effect of globalization on the capacity of LCCs. Second, globalization has a stronger positive effect on load factor of FSCs. Third, it was determined that the effect of globalization is stronger on FSCs' numbers of served destinations. Fourth, a moderate significant impact of globalization on LCCs' profitability is discovered.

Table 6. Results from the multiple regression for impact of globalization on LCCs' and FSCs' financial performance

Independent variables	LCCs				FSCs			
	Model 5 – RPK	Model 6 – NPM	Model 7 – ROA	Model 8 – yield	Model 5 – RPK	Model 6 – NPM	Model 7 – ROA	Model 8 – yield
KOF	8.378 (0.000)	-0.004 (0.998)	-0.496 (0.664)	0.225 (0.316)	4.123 (0.014)	4.211 (0.000)	3.828 (0.001)	-0.400 (0.108)
HHI	0.006 (0.749)	-0.011 (0.353)	-0.001 (0.957)	0.001 (0.523)	0.238 (0.161)	-0.019 (0.130)	-0.170 (0.162)	-0.002 (0.534)
DS	0.184 (0.000)	0.648 (0.003)	0.050 (0.012)	-0.010 (0.048)	0.108 (0.012)	0.005 (0.758)	0.003 (0.856)	0.007 (0.207)
Observations	99	99	99	99	110	110	110	110
R-squared	0.494	0.247	0.101	0.007	0.400	0.133	0.123	0.035
F-value	0.000	0.009	0.044	0.255	0.000	0.000	0.000	0.028

Source: created by the authors

What type of recommendations can be drawn for LCCs and FSCs in order to make a better use of the opportunities and reduce the threats of globalization? According to the research findings adding the flight destinations contributes to the improvement of operational and financial performance of airlines, especially low-cost. One of the ways to achieve this is cooperation with full-service airlines in order to expand coverage network – code sharing. Enjoying this partnership, low-cost airlines can get access to a broader flight network of FSCs, increase the number of carried passengers. Moreover, this partnership allows FSCs to reduce costs, which in literature is treated as the most common measure to survive the competition with LCCs. It could be especially useful for FSCs in routes where the demand for business class is less required. There are already existing partnerships between LCCs and FSCs: KLM/Air France – Transavia, Iberia – Vueling. It is recommended for FSCs and LCCs to implement a hybrid business model, which assumes the adoption of some features from each other. For LCCs it could be the improvement of customer service, the provision of more frills and expanding geography of flights in order to create customer loyalty and attract new passengers. From the prospective of FSCs it means to find a balance between decreasing cost and keeping high quality of service.

7. Conclusions

This research examines the impact of globalization represented by overall globalization level in European countries, globalization opportunity and globalization threat, on airlines' performance in the ECAA market. Despite great researchers' interest in the study of links between globalization and the airline industry, it is evident that knowledge about the impact of globalization on airlines' performance is still limited as well as how to measure

this impact. This research contributed to the identification of these gaps. Moreover, the research also attempted to find out the difference in impact of globalization on low-cost and full-service airlines.

The research focused on two principal impacts of globalization on airlines: globalization opportunities, including easier access to the new markets, technologies and sources, which are used by airlines to survive in the market; and globalization threats, such as an intensive competition, which should be managed by airlines in order to neutralize damage caused by globalization.

To achieve the main aim of this research, a multiple regression analysis applying **panel data design was conducted**. Data includes yearly observations of 19 selected European airlines collected for the 2007–2017 period. The regression results reveal that globalization positively and significantly affects airlines' capacity and number of carried passengers. This positive effect comes from the level of globalization in the ECAA countries and a broad geography of flights while the level of competition in the industry has no significant effect. Concerning financial performance of airlines, globalization can explain the increase in number of kilometers travelled by paying passengers (RPK), whereas profitability (NPM), return on assets (ROA) and yield does not.

A separate analysis of LCCs' and FSCs' samples disclosed diverse effects of globalization on operational and financial performance for these two business models. Unlike for LCCs, there is a significant positive effect of globalization on the load factor for full-service airlines, which can be explained by the growing number of served destinations, intensifying competition, and increasing of globalization level. A positive but moderate effect is observed on LCCs' profitability – the broader is the geography of flights, the higher is profitability of low-costs airlines. Hence, low-cost airlines benefited from globalization more in financial performance, while full-service airlines – in operational performance.

In the future, the research might be expanded by reducing the limitations of this analysis. Firstly, to get more accurate results in investigating of the impact of globalization, it is necessary to include all European airlines into the study sample and expand time horizon of the research. Secondly, it is necessary to decide the best way to measure globalization because HHI as a globalization threat variable is insignificant for almost all performance indicators.

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