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## Low-cost Transport Selection Model on the Polish Airline Services Market

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### **Abstract:**

**Purpose:** The aim of the research was to show the importance of factors determining the selection of a low-cost air carrier by Polish passengers, characteristic for individual age groups of respondents, and to determine the characteristics of Polish market for this segment of services.

**Design/Methodology/Approach:** The research used the method of a diagnostic survey using a tool in the form of original questionnaire. The research was carried out in 2019 at all Polish airports and 1060 were used for statistical calculations.

**Findings:** Five of the eight determinants of choosing a low-cost carrier were included in the discrimination model. Statistically significant discriminant differences in the studied groups were: large number of connections ( $F=27.395$ ;  $p<0.001$ ); ability to use sales promotion ( $F=9.65$ ;  $p<0.001$ ); departure from regional port ( $F=9.320$ ;  $p<0.001$ ); opportunity to purchase auxiliary services on the carrier's website ( $F=3.197$ ;  $p=0.023$ ); ticket price ( $F=2.669$ ;  $p=0.046$ ).

**Practical Implications:** The research shows that one of the key determinants of choosing a low-cost carrier is relatively low price of the flight. In addition, young people aged 18-30 years, besides the price, also pay attention to the number of connections. For people aged 31-45 and 46-60, one of the most important determinants of air travel are sales promotions, while for the oldest age group (>60 years), it is important to leave the regional port, which is close to where they live. It is also worth noting that Polish passengers attach less importance to the safety and punctuality of flights.

**Originality/Value:** Results of the conducted analyses allowed to determine the degree of general importance of individual determinants in the selection of the carrier and hierarchy of their detailed significance for people in particular age ranges.

**Keywords:** Low cost carriers, model, airlines, airports, passengers, Poland.

**JEL codes:** R19, R40, R49.

**Paper type:** Research article.

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## **1. Introduction**

Contemporary conditions of the passenger transport market development cause that this industry is facing serious threats, which include global economic recessions, more frequent natural disasters, health epidemics, strikes, armed conflicts in individual regions of the world and global threats of terrorism (Wong *et al.*, 2011). As a result of the liberalization of European market and transport industry, there have been major changes in the functioning of entities on the Polish market, including Polish aviation industry (Dobruszkes, 2009). The main result of the liberalization was the increase in competition between low-cost carriers and traditional carriers as well as between individual low-cost lines (Graham *et al.*, 2008). The main source of competition tightening was the right to access all air routes in the EU Member States (Dobruszkes, 2009)

Before liberalization, the structure of European aviation market showed a 75% share of traditional carriers and 25% of charter flights (Binggeli and Pompeo, 2002). The start-up of low-cost carriers changed its structure, gradually increasing their market share. The main advantages of these operators have been low labor costs and competitive price in comparison with traditional carriers, which results mainly from a smaller number of employees, lower remuneration, outsourcing, accounting, administrative and IT services to external companies.

The carriers also used previously unknown aggressive method of sale, innovative ways of reaching the customer in order to gain a competitive advantage and achieve higher profits compared to traditional airlines (Kumar, 2006). As a result of these activities, the fight for a passenger has increased. Carriers, wanting to attract the client, had to know his needs and determinants, which are guided in the process of choosing a low-cost carrier.

## **2. Characteristics of the Polish Low-Cost Flights Market**

In the realities of Polish passenger transport market development, specific conditions determining the model of shaping this service sector have arisen. Political system existing until 1989 generated significant difficulties in accessing the air services. Permits were granted for trips to Western countries to a limited extent, most people did not have passports, and in addition, air services were too expensive for the average Pole. In the discussed period, Poland became a democratic country, and Poles gained greater freedom to travel around the world, but then the main barrier was the price of air travel.

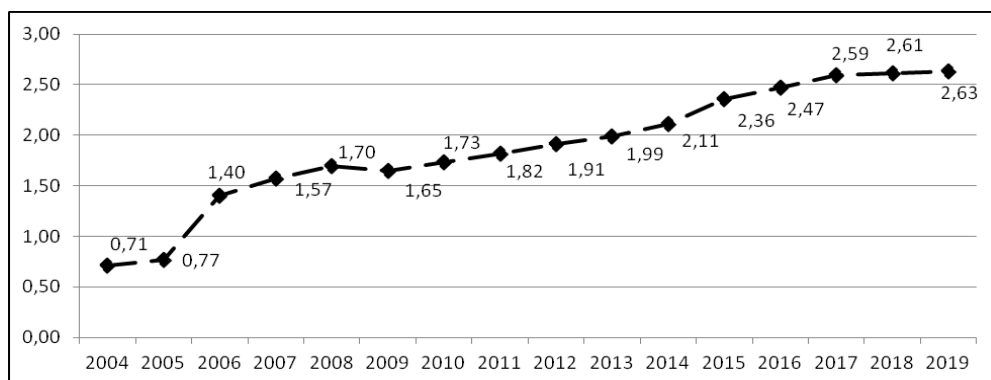
The change took place in 2004, when Poland joined the European Union, and related integration processes forced the adaptation of Polish aviation law to European requirements and the EU legal system. As a result of these changes in Poland, there was a dynamic development of the air services market, increased competition between carriers and development of the connections network and offers of

individual airlines, as well as the extension of additional non-ticket services. Entering the market economy and free competition system radically reversed the situation. Accession to the European Union, establishment of the Schengen area and opening of a free European airspace resulted in the dynamic development of low-cost air transport and the availability of even less affluent part of the population to this range of services (Marciszewska *et al.*, 2006).

The Polish aviation market has become part of the global transport system. Significant quantitative and qualitative changes took place after 2004, mainly as a result of the accession of Czech Republic, Slovakia and Hungary to the European Union. Along with further enlargement of the EU, the network was expanded by lines registered in Romania and Bulgaria, which became members in 2007. At that time, the air services market was also penetrated by strategic alliances (Whitelegg, 2003).

The economic crisis, which began in 2008, reduced demand in the market for passenger air services. In such situation, the lines started looking for sources of additional income, introducing services generating non-ticket income into their offer (e.g., introducing the meal charges, reduction of the weight of free transported luggage, possibility of booking a hotel and car, purchase of insurance and offering paid services related to the priority of boarding and increased space for legs). Fortunately, effects of the crisis were not long-term - the reversal of trends started already in 2009, from which there is an increase in demand for air transport up to now (Figure 1).

**Figure 1.** Poland's share in the European aviation market

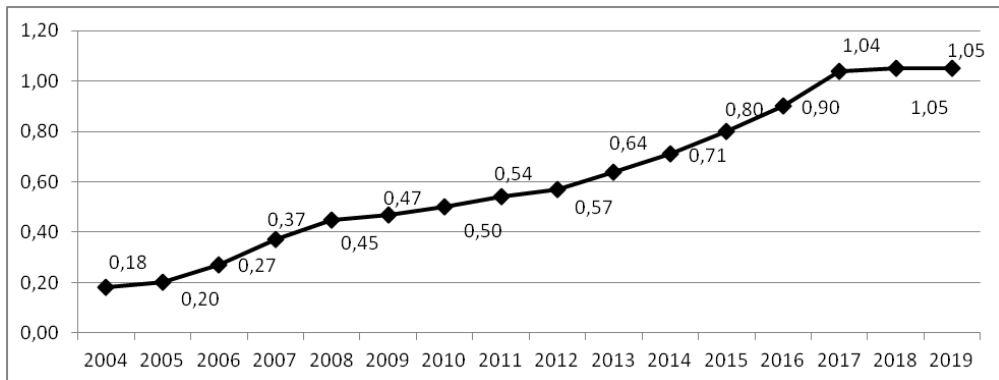


**Source:** Own study based on Eurostat.

The airports began to implement a number of investments and modernize the fleet. Individual cities in Poland have begun to build new airports. Investments related to the construction and expansion of airports and complementary communication system in Poland resulted in a gradual drop in the prices of air tickets, which attracted more and more customers with diverse material and social status as well as

different preferences (Tłoczyński, 2016). Despite the fact that airports in Poland serve more and more passengers each year, Poland's participation in global air traffic is still unsatisfactory. In passenger traffic in Europe in 2004, it was only 0.71%, and in 2014 - 2.1%, which, however, means that over 10 years it has more than tripled, while in 2019 it increased to 2.63% (Figure 2).

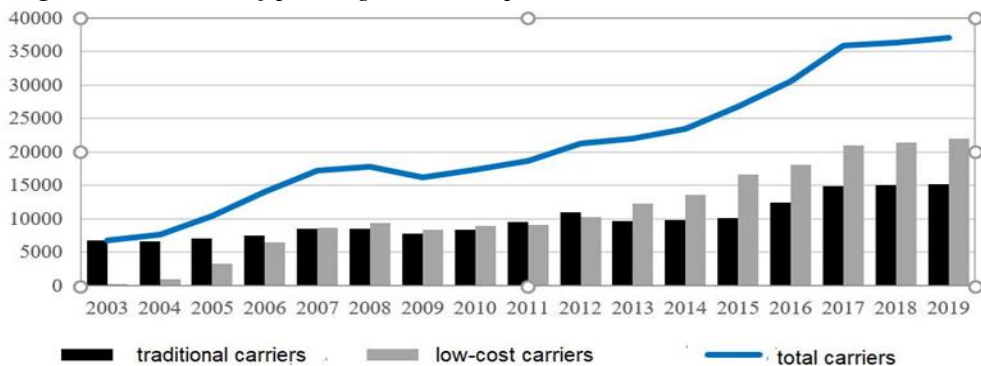
**Figure 2.** Mobility of Poles in 2003-2019



**Source:** Own study based on data from Analysis and Statistics Department of Civil Aviation Authority, Statistical Yearbooks of the CSO, Warsaw 2020.

However, the absolute value of the growth is not impressive, which is primarily due to the low level of Poles' affluence and relatively low aviation mobility factor of only 1.05 in 2019. It should be noted that the mobility factor for Cypriots, Maltese and Icelanders exceeds 8, the Dutch - 4.1, the English - 3.0, the Germans - 2.7. Only Romanians and Slovaks have less air mobility than Poles in Europe. Data regarding the mobility of Poles in 2003-2019 are presented in Figure 3.

**Figure 3.** Structure of passenger air transport in Poland in 2003-2019



**Source:** Own study based on data from Analysis and Statistics Department of Civil Aviation Authority, Statistical Yearbooks of the CSO, Warsaw 2020.

The market position of air carriers operating in Poland for several years is stable. However, one can notice significant growth dynamics of the number of passengers served in the segment of low-cost services. Such a situation testifies to the development of the LCC market, regardless of the destinations preferred. This is mainly due to the attractiveness of the LCC offer compared to carriers of other segments and types of transport. Detailed data on the volume of passengers checked in at Polish airports by traditional and low-cost carriers is presented in Figure 3.

In 2003, airports in Poland served only 10 passengers using LCC; in 2004, that is in the year of Poland's accession to the EU - 985 thousand passengers, while 4 years later, i.e. in the year when the economic crisis began - 9,397 thousand passengers, and in 2019 - up to 21,896 thousand. In Poland, the increase in the number of passengers served using low-cost airlines in 2008-2019 amounted to 42.91%. Presenting this issue in terms of time perspective allows to determine both the periods of accelerated development of these carriers, as well as the slowdown in connection with currently existing market conditions (Figure 3).

### **3. Research Methods**

The aim of the research was to show the importance of factors determining the selection of a low-cost air carrier by Polish passengers, characteristic for individual age groups of respondents, and to determine the characteristics of Polish market for this segment of services. The paper hypothesizes that customers in different age groups have different expectations in relation to lines operating in the low-cost formula, therefore carriers should apply other models to reach potential customers.

The research used the method of a diagnostic survey using a tool in the form of original questionnaire. The research was carried out in 2019 at all Polish airports. The five-point Likert scale was used to measure the importance of problems. The size of the research sample was determined based on the size of the adult population. When calculating the size of a representative sample, the confidence level was set at 0.95, the estimated fraction size at 0.05, while the maximum error was set at 0.05.

A quota were used, in which respondents were selected on the basis of availability, taking into account criteria related to the adulthood and gender (women accounted for 56.5%, men 43.5%). Respondents filled out 1211 questionnaires, of which 1060 were used for statistical calculations. The criterion used for the division was the age of respondents: 18-30 years were 63.9% of respondents, aged 31-45 years 22.3%, in the group from 46 to 60 years 9.5%, and aged 61 and more 4.3%.

Statistica 13 PL was used for statistical calculations. In order to decide which variables distinguish four naturally emerging groups, the discriminant function analysis was used, because it allows to study differences between groups of objects based on a set of selected independent variables (predictors). In addition, it is used in correlation studies, i.e. when causal relationships between variables are not well

recognized. The studies used a classification function in the form of calculating coefficients that were defined for each group of variables. Prior to the analysis, multivariate normality was tested, checking each variable for normality of distribution. It was assumed that variable variance arrays are homogeneous in groups. Slight deviations were not so important due to the large population of groups. Statistically significant differences were those with mean probability of less than 0.05 ( $p < 0.05$ ).

Secondary studies were also carried out by analyzing statistical data obtained from reports received from the Analysis and Statistics Department of Civil Aviation Authority, Statistical Yearbooks of the CSO (2003-2017) and Eurostat.

#### 4. Research Results

In the study carried out with the use of a diagnostic survey, passengers were asked about the reasons for choosing the low-cost carriers. Five of the eight determinants of choosing a low-cost carrier were included in the discrimination model. Statistically significant discriminant differences in the studied groups were: large number of connections ( $F=27.395$ ;  $p < 0.001$ ); ability to use sales promotion ( $F=9.652$ ;  $p < 0.001$ ); departure from regional port ( $F=9.320$ ;  $p < 0.001$ ); opportunity to purchase auxiliary services on the carrier's website ( $F=3.197$ ;  $p=0.023$ ); ticket price ( $F=2.669$ ;  $p=0.046$ ). Outside of the model, there were determinants related to punctuality of connections ( $F=1.681$ ;  $p=0.169$ ), safety ( $F=1.642$ ;  $p=0.178$ ) and arrival to regional port close to the destination ( $F=1.564$ ,  $p=0.197$ ) (Table 1).

**Table 1.** *Determinants of choosing a low-cost carrier, taking into account the age of respondents*

Determinants	Wilks' Lambda: 0.834; F(24.304)=8.214; p<0.001			Age of respondents			
	Wilks' Lambda	F	p	18-30 years	31-45 years	46-60 years	above 60 years
large number of connections	0.699	27.395	<0.001	1.319	0.992	0.530	0.538
ability to use sales promotion	0.657	9.652	<0.001	0.758	1.097	0.828	0.395
departure from regional port	0.656	9.320	<0.001	0.586	0.674	0.822	1.238
opportunity to purchase auxiliary services on the carrier's website	0.641	3.197	0.023	0.797	0.666	0.527	0.904
ticket price	0.640	2.669	0.046	2.798	2.998	2.895	2.820
punctuality *	0.676	1.680	0.169	1.056	0.974	1.213	1.202
safety *	0.675	1.642	0.178	1.130	1.212	1.129	0.924

arrival to regional port *	0.673	1.564	0.197	2.042	1.889	2.106	1.904
constant				18.199	19.001	18.563	18.905

**Note:** \*determinants that were outside the model.

**Source:** Own study based on surveys.

The highest value of the classification function was recorded in the ticket price position. The low cost of purchasing the service is of the greatest importance when choosing a trip with low-cost lines for people of all ages ( $p = 0.003$ ). People aged 18-30 also attach significant attention to the number of connections and value their systematic growth. For example, on the route from Great Britain to Poland, national carriers - British Airways and Polish Airlines LOT offer only destinations between London and Warsaw, while carriers operating in the low-cost segment allow flights from Polish regional airports to, among others, ports in Glasgow, Liverpool, Manchester, Bristol and Doncaster.

It should be noted that this factor is less important for people over 46 years of age (classification function for people of this age group is almost 2.5 times lower). Passengers of the low-cost service segment aged 31-45 highly appreciate the use of extremely attractive price promotions that are not available in traditional lines (this classification function has reached the value of 1.097). The ability to comprehensively plan the entire trip on the carrier's website is important primarily for people over 60 (0.904) and the youngest group of 18-30 years (0.797).

Sales promotions are of minor importance for people aged 61 and more (classification function = 0.395), while significant proportion of respondents over 60 years of age paid attention to the possibility of departure from a regional port close to where they live. In this age group, access to the airport has become an important factor in choosing the low-cost carrier instead of a traditional one (classification function = 1.238). The smallest importance to the proximity of the airport location is attached by passengers aged 18-30.

## 5. Discussion

Akamavi *et al.* (2015) argue that a very important issue in finding an advantage in competition related to the provision of services in the transport industry, especially in the low-cost segment of air services, is managing the passenger relations, understanding the determinants of passenger loyalty, gaining the trust and providing satisfaction to customers. In their opinion, satisfaction of passengers is the most important factor increasing their loyalty. Also Cooil *et al.* (2007) indicate that passenger loyalty is one of the key factors, by which carriers can gain a competitive advantage in the low-cost air services market. Customers will be loyal if carriers adapt their offer to their needs, and low-cost airlines will provide significant opportunities to take advantage of various types of promotion. This is also confirmed by research of Mitreğa (2006) that by adjusting the offer to the clients' needs, they

ensure their loyalty and long-term success on the market (Mazurek-Kusiak *et al.* 2019).

Although many authors consider customer loyalty as the primary determinant of success, little research has been done on this stimulator in the selection of low-cost air services. Such research was conducted, among others, by Wang *et al.* (2017), who showed that the main factors that distract passengers when choosing a low-cost carrier are the satisfying experience of service and the subjective perception of flight safety. The following were: simple form of buying the airline tickets, advertising on television, radio and social media, as well as trust in the carrier.

Other researchers, like Barbot (2008) or Pels *et al.* (2009) dealing with strategies of gaining a competitive advantage, showed that the most important in achieving this goal is the strategy of shaping the level of prices and the quality of low-cost carrier services, which translates into the level of customer satisfaction. To the level of prices as an important determinant of choosing a low-cost carrier, the attention was also paid by Espino *et al.* (2008), on the other hand, the quality of services is the most important factor in gaining a competitive advantage for Kim and Lee (2011), and providing passengers with satisfaction for Gustafson (2012); paying attention to the role of employees in ensuring the customer satisfaction, which translates into the trust and loyalty of passengers in relation to the carrier (Gustafsson, 2009).

Taking into account these conditions, in the opinion of Polish authors, the prevailing opinions are that when choosing a low-cost airline, the low price of the service is of decisive importance for the recipient. Due to its application, the accessibility, mobility and development dynamics of this segment of air transport have been improved (Hawlina *et al.* 2019; Marciszewska, 2007; Zagrajek, 2014; Tłoczyński, 2016). Many authors, in addition to the price value, draw attention to the importance of the creation and development of Polish regional airports and compatible communication infrastructure in the areas of their location. Time of arrival and proximity to the airport are increasingly decisive for the choice of a low-cost airline (Hawlina and Mazurek-Kusiak, 2020; Tłoczyński, 2016; Huderek-Głapska, 2011).

In 2019, Paprocki (2020) addressed the environmental impact of non-cost hauling and the need to reduce greenhouse gas emissions. In 2019 in some European countries, such as Switzerland, it has been decided to introduce administrative solutions in this regard. The situation in the market of low-cost carriers was also drastically changed by the COVID'19 pandemic. According to Kubas (2020) between 2020 and 2021 as many as 43 airlines announced termination or suspension of operations. Konieczny's (2021) research shows that globally, the total financial losses in gross revenues of airlines during the pandemic were estimated at \$370 billion, while losses of airports and air navigation entities were \$115 billion and \$13 billion, respectively.



With reference to the basic scope of issues specified in the title, research carried out by the authors showed that the most important importance for Polish passengers in the selection of low-cost air services is the price of service, number of connections, sales promotions, departure from the regional port and possibility of buying auxiliary services on the carrier's website. However, the flight schedule, punctuality and distance of the arrival port to larger agglomerations are less important.

## 6. Conclusions

Changes taking place in the low-cost air services market are reflected in the size of Poland's share in the European market. Despite the low share in 2003 (only 0.69%), it increased by 275% by 2019 and amounted to 2.59%. The number of passengers served has also been systematically growing, and the average growth rate in this period amounted to 35.4%.

Increasing competition between individual airlines in this segment of services forces immediate action aimed mainly at strengthening the customer relationships, improving the quality of passenger service, technical conditions for improving the comfort of staying in airplanes, security and attractiveness of destinations and the grid of available destinations.

The research shows that one of the key determinants of choosing a low-cost carrier is relatively low price of the flight. In addition, young people aged 18-30 years, besides the price, also pay attention to the number of connections. For people aged 31-45 and 46-60, one of the most important determinants of air travel are sales promotions, while for the oldest age group (>60 years), it is important to leave the regional port, which is close to where they live. It is also worth noting that Polish passengers attach less importance to the safety and punctuality of flights.

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