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CENTRAL TRANSPORT HUB IN POLAND'S AIRPORT SYSTEM

Abstract

Objectives: The study investigates the proposed Central Transport Hub (CPK) in Poland's aviation system. Its primary goal is to evaluate CPK's future role as a major airport integrating hub and point-to-point functions, serving both regional and international passengers, and contributing to the modernization of Poland's transportation infrastructure.

Material and methods: The research analyzes CPK's potential impact by examining aviation policies, infrastructure strategies, and operational data from existing Polish airports. The study reviews official documents, statistical data, and industry reports to assess CPK's role within the national and regional contexts, including its interactions with existing airports and carriers.

Results: Findings suggest that CPK will become Poland's primary hub, centralizing air traffic and replacing Warsaw Chopin Airport. The analysis highlights the growing significance of PLL LOT as the principal carrier at CPK, with projected fleet expansions and passenger increases. CPK is expected to transform Poland's transportation network by integrating high-speed rail connections, improving accessibility across regions, and supporting economic growth.

Conclusions: CPK is positioned as a key project for Poland's infrastructure development, aligning with global aviation trends and national priorities. While promising, challenges include ensuring fair access for carriers, economic feasibility, and effective integration with existing networks. Further studies should address these issues to optimize CPK's contributions to Poland's transportation system.

Keywords: *CPK, regional airports, LOT Polish Airlines, Central Transport Hub, PLL LOT, Chopin Airport, Poland`s airport system*

The debate concerning the proposed Central Airport (Wilk, Karwowski, 2024) also referred to as the Central Transport Hub (*Centralny Port Komunikacyjn*y-CPK), has been continuing for several years; however, the precise role that this airport is to play in the Polish airport system remains unclear. Despite expectations of modernity, quality, and supranational function which CPK faces, certain of the functions currently fulfilled by Warsaw Chopin Airport have not been considered. Therefore I formulate the following research problem: it is anticipated that in the future the Central Transport Hub will provide services to all carriers which pay a fixed price for these services without any deterioration in the quality of service. It is expected that LOT Polish Airlines (PLL LOT or its successor) will be one of the most significant carriers there. CPK will be capable of performing both hub and point-to-point functions and will also serve as the primary airport for residents of Mazovia and neighbouring regions.

The answers to the research questions seek to confirm the hypothesis:

1. Has the role of individual airports been defined in the Polish civil aviation system?
2. What is the role of Warsaw Chopin Airport and other Mazovian airports in the civil aviation system in Poland and Mazovia?
3. What is the role of PLL LOT in the civil aviation system in Poland?
4. What types of carriers should be able to use CPK?

The categorisation of airports in Poland

The development of the airport system by the state is one of the elements of ensuring civil aviation security (Bujnowski, 2016). In turn the civil aviation security system is based on international law arrangements that ensure its stability and global compatibility (Dempsey, 2008; Zajac, 2016). The hierarchy of Polish airports was described in a 2003 document of the Ministry of Infrastructure. It assumes that there are three categories of airports:

1. A central airport (Warsaw Chopin Airport);
2. A main regional airport (Cracow John Paul II International Airport);
3. A regional airport (Gdańsk-Rębiechowo, Katowice-Pyrzowice, Poznań-Ławica, Wrocław-Strachowice, Szczecin-Goleniów, Rzeszów-Jasionka, Bydgoszcz-Szwedrowo, Łódź-Lublinek, Zielona Góra-Babimost, Szczytno – Szymany) (Ministerstwo Infrastruktury, 2003).

The 2023 Policy for the Development of Civil Aviation in Poland until 2030 (with a prospect until 2040) adopted by the Ministry of Infrastructure states that:

There are currently 15 airports operating in Poland, namely

1. *Warsaw Chopin Airport—dominant in terms of the volume of traffic served and air transport and infrastructure;*
2. *Cracow-Balice Airport;*
3. *Gdańsk Lech Wałęsa Airport;*
4. *Katowice Wojciech Korfanty Airport in Pyrzowice;*

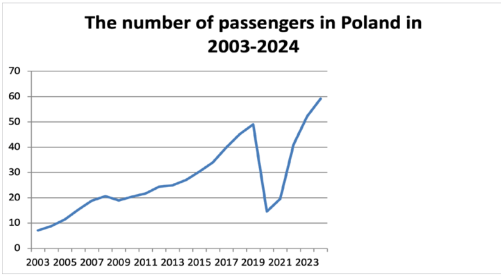
5. *Warsaw Modlin Airport;*
6. *Wrocław-Strachowice Airport;*
7. *Poznań-Ławica Henryk Wieniawski Airport;*
8. *Rzeszów-Jasionka Airport;*
9. *Solidarity Szczecin-Goleniów Airport;*
10. *Lublin Airport;*
11. *Bydgoszcz Igancy Jan Paderewski Airport;*
12. *Łódź Airport Central Poland;*
13. *Olsztyn-Mazury Airport;*
14. *Zielona Góra-Babimost Airport;*
15. *Warsaw-Radom Airport (Ministerstwo infrastruktury, 2023, p.48).*

In the Strategy for Sustainable Transport Development until 2030, the Ministry of Infrastructure posited that *the construction of CPK is a comprehensive project that envisages the creation of a universal passenger transport system through the construction and operation of a viable and innovative transport hub. This will achieve a place among the world's top 10 airports and lead to the reconstruction of the national rail transport system as an attractive alternative to road transport, covering all areas of Poland. Furthermore, it will ensure the development and sustainable integration of Warsaw and Łódź agglomerations (*Ministerstwo Infrastruktury, 2019, p. 94*).* It is worth noting that the number of passengers assigned to the project has been revised from its previous versions. The current one assumed that the port would be able to handle 34 million passengers after opening in 2032 (CPK, 01 2025). The 2020 vision assumed that the aviation component of the airport would be operational in 2027. Its capacity was then estimated at 40 million passengers (CPK,10 2020)

It is also crucial to note that airports can be classified according to the size of aircraft they handle and the quality of their infrastructure. According to Jerzy Liwiński, *airports are categorised according to a reference code system that considers their operational and technical features, as well as their ability to handle particular types of aircraft. This consists of a number and a letter, with the number from one to four reflecting the length of the runway and the letter from A to F determining the technical parameters of the aircraft. A typical airport with the capacity to accommodate Boeing 737 should possess a minimum reference* *code of 3C, which denotes a runway length of 1,200-1,800 metres, a wingspan of 24-36 metres, and a landing gear wheelbase of 6-9 metres (Liwiński, 2023, p.46).* Furthermore, the regulations outlining the provision of fire protection at airports are associated with this classification (Rozporządzenie Ministra Infrastruktury z dnia 1 lutego 2022 roku w sprawie przygotowania lotnisk do sytuacji zagrożenia oraz lotniskowych służb ratowniczo-gaśniczych). The situation is further complicated by the European Union's restriction of a regional airport as an airport serving fewer than three million passengers per year (Kasprzyk, 2023).

Setting aside theoretical and classification considerations, the contemporary airport market in Poland can be described as follows: when data from airports is considered, it can be observed that although scheduled traffic is handled at 15 airports in our country (In addition to the airports referenced in the 2003 document, airports in Modlin, Radom, and Lublin need to be included on the list. This proposed list is consistent with the one published by the Ministry of Infrastructure in 2023), as much as 95% of it is concentrated on just seven of them (Loga-Sowiński, 2024, 1). The group, which is referred to as the 'Top 7,' comprises: Chopin Airport in Warsaw, airports in Cracow, Katowice, Gdańsk, Wrocław, Modlin, and Poznań. It should be noted that, with the exception of Modlin, which is discussed in greater detail later in the text, all of the aforementioned airports have experienced a notable increase in activity during the initial six-month period of 2024. The author of the report based his findings on the data from airports, given that the Civil Aviation Authority has not yet published the official data for the second quarter of 2024. This allows for making a forecast of the highest number of passengers ever to be served at Polish airports (Loga-Sowiński, 2024, 3). Predictions proved to be correct, with the number of passengers in Poland in 2024 approaching 60 million (CAA, 03 2025)

Figure 1. *The number of passengers served at Polish airports in 2003-2024*



Source: *own study based on: CAA, the number of passengers served in 1993-2010 and the flight operations performed in 1997-2010 in scheduled and charter traffic at Polish airports, Warsaw, 01/2014; CAA, the number of passengers served and operations performed in domestic and international scheduled and charter traffic in 2011-2013, Warsaw, 03/2014; CAA, the number of passengers served and operations performed in domestic and international scheduled and charter traffic in 2014-2016, Warsaw, 11/2017; CAA the number of passengers served and operations performed in domestic and international scheduled and charter traffic in 2017-2019, Warsaw, 04/2021; CAA, the number of passengers served and operations performed in domestic and international scheduled and charter traffic in 2020-2022, Warsaw, 03/2023; CAA, the number of passengers served in domestic and international scheduled and charter traffic in 2022-2024, Warsaw, 03/2025.*

Is a central airport meant for Mazovia?

It is crucial to consider the dual function that the Central Transport Hub will serve. From the perspective of PLL LOT, CPK will serve as a transfer airport for passengers from Poland and other clients of the national carrier. Additionally, it will serve as a primary airport for traditional airlines operating within our country, with an expanding range of available routes. This is exemplified by the commencement of flights by Ethiopian Airlines (Loga-Sowiński, 2024, 2) and the announcement of connections by another Persian Gulf airline—Etihad. (Kieruzal, 2024, 2) What is more, due to the geographical circumstances, it will be the airport of choice for passengers from Mazovia and eastern and north-eastern Poland, for whom the airport in Olsztyn-Szymany does not provide an adequate range of services. Additionally, residents of Mazovia have the Modlin and Radom airports as alternative options. Figure 2 indicates the number of passengers at these airports. While Modlin airport may be perceived as a low-cost alternative to the services provided by traditional airlines at Okęcie, this is negated by the comprehensive range of Wizz Air flights available at the latter airport (Supernak, 2023). This is indicative of the evolution in the operation of low-cost airlines, which are eager to utilise major airports. The situation is dynamic, as evidenced by the proposal to construct a terminal at Warsaw Airport for passengers of low-cost and charter flights (Piotrowski, 2024). It would be remiss not to mention Wizz Air's long-standing absence from Modlin (Rynekinfrstruktury.pl, 2013). Nonetheless, in recent months, the stance of the decision-makers at the Hungarian airline has begun to shift (Sierak, 2024). It is also noteworthy that the current negotiation process with Ryanair, the largest airline utilising the near-Warsaw airport, is still ongoing. This airline, which employs rather aggressive tactics, was the sole carrier at Modlin airport until 2024. The agreement negotiated with the airport 10 years earlier was undoubtedly advantageous for it. Given the lack of willingness on the part of Modlin to enter into a new agreement which would be moderately favourable to the airport, the route network of the Irish airline was severely limited, which in turn affected the number of passengers served this year (Kieruzal, 2024, 1).

Figure 2 presents comparison of the number of passengers served at Mazovian airports in the last two decades.

The third of the Mazovian airports is Warsaw-Radom Heroes of June 1976 airport. The project entailed the construction of a new infrastructure from the ground up, replacing the previous one, which included an old terminal purchased from Łódź (Węgliński, Natalli, 2019, p.145). The latest version of Radom airport commenced operations in spring 2023 and by the end of the year served only over 100,000 passengers (Lotniskowarszzawa-radom.pl., 2024, 1) The year 2024 saw a decline in the number of travellers passing through the airport, with only 31,000 passengers recorded in the first five months (Lotniskowarszzawa-radom.pl., 2024, 2). This serves to corroborate the reservations expressed with regard to the decision to expand Radom airport and sheds light on the political motivations of this decision (Czubiński, 2021). The inferior outcome is also attributable to the reduced involvement of PLL LOT, which is now in a position to develop its offer based on economic indicators rather than on the basis of party orders (PLL LOT, which was under control of the United Right government, announced a series of planned connections from Radom in 2022. Nonetheless, following the change in the ruling party after the elections on 15 October 2024, this offer was significantly revised. Only the regular connection to Rome and two charter flights were retained). (rynek-lotniczy.pl., 2022). The relatively low number of passengers handled at Radom airport does not impact the appearance of Figure 2, as it represents a negligible percentage of the aggregate results. The establishment of the current version of Radom airport can be attributed to the resolution of internal political disagreements and the formulation of a comprehensive financial plan, as articulated by Marcin Horała, the government's plenipotentiary responsible for the CPK construction project, in 2021 (Czubiński, 2021).

Figure 2. *The number of passengers served at Mazovian airports in 2012-2024*

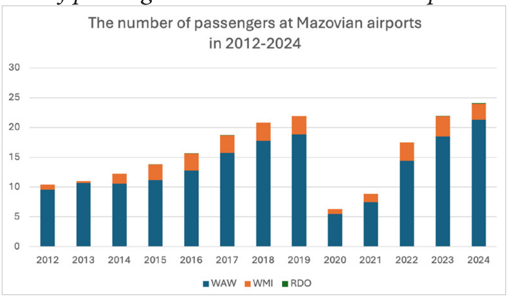


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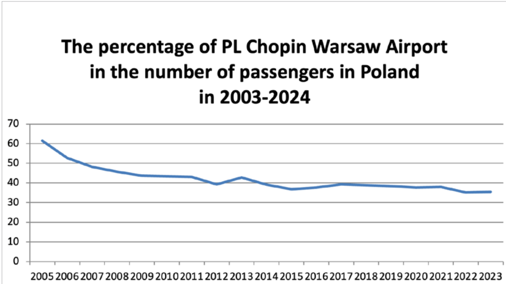
Figure 3. *The percentage of Warsaw Chopin Airport in the number of passengers served at Polish airports in 2003-2024*



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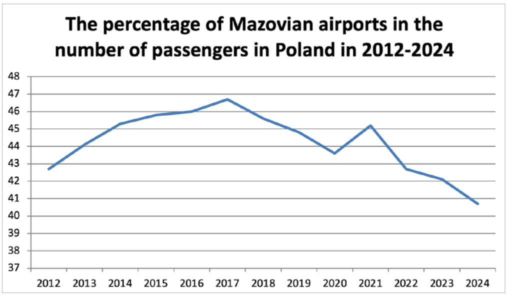
A review of the operation of the aviation market in Europe and worldwide suggests the existence of two main models.

1. The hub model is based on the concept of airports functioning as a central operational hub for individual airlines. The majority of passengers on individual routes arrive at the hub where they have access to a wide range of connecting flights (within the same airline or alliance). This operational approach is preferred by what are commonly referred to as 'traditional carriers.'
2. The point-to-point model is characterised by a direct journey to the destination airport. This is where low-cost carriers offer a more extensive range of services (Mikosz, 2011. p. 21-28).

As Jarosław Sztucki observed, *the principal divergences between the operational models of the two principal categories of airlines offering scheduled services (i.e., those operating according to a published timetable and available for sale to the public) can be encapsulated in a few key points:*

a. *in terms of networking, a traditional airline (network) offers the option of purchasing a multi-destination ticket, which includes the guarantee of transport to the final destination, regardless of any potential connecting issues, while a low-cost airline sells single-destination tickets.*
b. *in terms of the standard of service, low-cost airlines do not offer higher classes and tend to have more compact seating arrangements. Furthermore, complimentary beverages and meals are not provided.*
c. *a uniform fleet is utilised more efficiently by low-cost airlines, which typically operate a single aircraft type and undertake a greater number of flights per day than traditional airlines.*
d. *the sales system of low-cost airlines is entirely self-service, with sales conducted via websites. This approach eliminates the necessity for commissions to be paid to agents and the associated costs of maintaining sales offices (Sztucki, 2011, p. 10).*

Figure 4. *The percentage of airports from Mazovia in the number of passengers served at airports in Poland in 2012-2024*



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As it can be observed, Mazovia continues to represent over 40,7% of the total number of passengers utilising airports in Poland. This illustrates the significant contribution that the region makes to the country's civil aviation system.

Military perspective

In the discourse surrounding the prospective role of CPK, the possibility of its involvement in the country's security system is also considered. As a former US military commander in Europe Benjamin Hodges observed: *this project is precisely what is required by NATO and what the European Union has in mind when discussing military mobility. Furthermore, CPK is a valuable asset for the military utility of all Europeans (Gazeta prawna, 2018).*

In the context of CPK's construction, the possibility of applying for funds under the European Union programme was also considered. While the initial stage of the programme yielded co-financing for elements of the rail infrastructure associated with CPK (Ministerstwo Funduszy i Polityki Regionalnej, 2021), there is no prospect of funding for the construction of airport infrastructure. The expansion of airport infrastructure as part of this European project will occur, among other locations, in Wrocław (Rynek-lotniczy.pl, 2023) and Rzeszów (Supernak, 2022), and Poland was one of the most active and successful countries in terms of the application process for funds. The total co-financing for projects originating from our country amounted to €129.4 million, which is approximately equivalent to PLN 550 million (Centrum Unijnych Projektów Transportowych, 2024).

Infrastructure perspective

It is of equal significance to consider the connection of the new airport with the existing transport infrastructure, in order to enable access to the airport. The principal mode of transport facilitating the interchange of passengers at CPK was to be rail. The PiS government presented a revolutionary concept, not only in the context of Polish reality, but also in terms of its potential to transform the existing railway infrastructure. It was assumed that the railway station at CPK would serve as a primary transfer point, not only for passengers utilising the airport, but also for those who currently use the Warsaw station as a transfer point. In addition, the plan entailed the construction of over 1,600 kilometres of new railways in the vicinity (Majszyk, 2019). The creators of the project assumed that *the railway component of the CPK Programme, which has been divided into stages to be completed by 2040, would comprise a web of new lines extending from 10 directions to CPK and Warsaw. It is anticipated that the completion of the railway network will reduce the current journey time to the central airport by train to a maximum of two hours. The network will encompass the country's most populous urban centres, with the exception of Szczecin, which is situated at a considerable distance and can be reached by rail in approximately three hours and 15 minutes. Furthermore, CPK will offer convenient access to border areas of the Czech Republic, Slovakia, Ukraine, Belarus, Lithuania, and the Kaliningrad Oblast (Majszyk, 2019).*

The potential for future rail accessibility is currently being evaluated, with the most significant potential connections being the so-called 'Y' stop—a high-speed railway linking Warsaw with Łódź, Wrocław and Poznań (and ultimately other cities in Poland and Europe). This version of the development of CPK-related rail infrastructure is contained in the Multi-Year Programme of the Central Communication Port for 2024-2032 published in 2024-2025 (CPK, 12 2024). It is also of key importance to consider the potential for connecting CPK to the nearby expressways.

PLL LOT as the most significant carrier at CPK

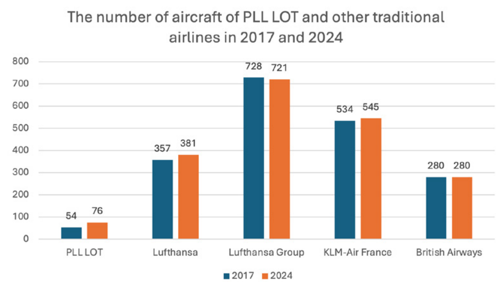
Each hub airport is served by a primary carrier. In the case of CPK, PLL LOT is to dominate. The carrier, which served just over 10 million passengers in 2023, approached its record-breaking result of 2019. In the final year preceding the advent of the pandemic, PLL LOT recorded a total of 10.1 million passengers on its flights (Malinowski, 2024). This may be indicative of a recovery in the performance of our national carrier following the delays caused by the pandemic. The PLL LOT Strategy for 2024-2028, published on 5 October 2023, projected that by the final year of validity of the strategy the number of passengers will reach 16.9 million (Lot.com.pl., 2023). In 2018, Rafał Milczarski, the then-CEO of the airlines, projected that the number of passengers would reach a range of 20 to 30 million by 2027, coinciding with the anticipated opening of CPK (businessinsider.com.pl, 2018).

It is a requirement that aircraft be used for the transport of passengers. In June 2018, the fleet of PLL LOT comprised a total of 54 aircraft (pb.pl., 2018). In October 2022, Michal Fijoł, a member of the management board of PLL LOT, announced plans to double the size of the fleet in comparison to 2016. At that time, the number of aircraft with a crane on the tail was 80 (Dybiński, 2022). Towards the conclusion of 2022 and the advent of 2023, PLL LOT ceased operations of the Bombardier Q-400 (Walków, 2023) and utilises aircraft with jet engines. In mid-May 2024, PLL LOT operated a fleet of 75 aircraft, comprising seven Boeing 787-900 Dreamliners, eight Boeing 787-800 Dreamliners, 12 Boeing 737-8 Max, six Boeing 737-800, 15 Embraer 195 (in various versions), eight Embraer 190, 15 Embraer 175, and five Embraer 170 (Lot. com. pl., 2024, 2) Subsequently, in August of the following year, Embraer 195-E2 (Janicki, 2024) will be introduced to the fleet. These new machines, which are more economical and capacious than the first generation aircraft, are one of the options being considered for the replacement of the regional fleet. Their capacity is also not insignificant; they can take 136 passengers on board (Walków, 2024). The principal competitor in this category is Airbus A-220. It is anticipated that PLL LOT will operate a fleet of 110 aircraft by 2028 (Loga-Sowiński, 2024, 2). It seems plausible that the national carrier will acquire Airbus aircraft of varying capacities. It is anticipated that PLL LOT will operate a fleet of 135 aircraft by 2032, which coincides with the projected opening of CPK (Madejski, 2024). Nonetheless, comparisons with Lufthansa, at which level our carrier would then be positioned, are likely to be misguided. Figure 5 presents a comparison of the number of aircraft operated by PLL LOT and those of potential competitors. The comparison is unfavourable to PLL LOT, and it may be reasonably concluded that there is little prospect in the near future of establishing an airline capable of competing with the largest carriers in Europe. The observable consolidation trends in the European aviation industry over several decades appear to indicate that the optimal strategy for PLL LOT may be to seek a significant industry investor in order to safeguard its operational autonomy and ensure the continued viability of the brand. It is similarly conceivable that the airline could persist as an autonomous, medium-sized carrier, at least for as long as market conditions permit. Similarly, a comparison with the number of aircraft would be corresponding to a comparison with the number of passengers served or profit although our national carrier made a sizeable profit in 2023 (It is anticipated that PLL LOT generated a net profit in excess of one billion dollars in 2023) (Loga-Sowiński, 2024, 2). In the contemporary era, the economic entities which comprise the airline industry are composite forms. The Lufthansa Group is comprised of several distinct entities, including Lufthansa itself, along with Germanwings, Discover Airlines, and various regional airlines, SWISS with Edelweiss, Austrian Airlines, Brussels Airlines, Eurowings, and Lufthansa Cargo (lufthansagroup.com, 2024). The aforementioned entities will imminently be joined by ITA, which represents the residue elements of Alitalia (Walewska, 2024).

The KLM-Air France group is comprised of KLM, KLM-Cityhopper, Martinair, Transavia Netherlands, Transavia France, and Air France, HOP! (www.airfranceklm.com, 2024). In due course, the already capital (Dybiński, 2023) and organisationally (SAS Group.net., 2024) linked SAS will also become part of the group.

The comparison indicates the formidable capabilities and prospective growth of our national carrier in comparison to its local competitors. In light of the prevailing trend towards consolidation in the modern aviation market, it may be reasonable to subject the assumptions regarding the potential for CPK and PLL LOT to assume a leading role to closer scrutiny. Furthermore, it is unlikely that Warsaw Chopin Airport will continue to function after the opening of CPK, both from an operational and economic perspective. (Money. pl., 2023). The question of whether low-cost airlines will be present at the new airport remains unanswered. In light of the observed trend towards the establishment of a limited presence of these carriers at major European airports, it seems inevitable that a similar situation will arise in this context. It is this type of operator that has the potential to significantly increase the number of passengers, which should, in turn, improve the economic viability of the new airport. The key issue is to establish a fair and balanced pricing structure for the carriers, which should not favour any one operator. Considering the rapid evolution of the market and the exponential growth in passenger traffic at Polish airports, the question of airport classification is becoming secondary. It is feasible that within the following few years, the final concept for CPK's operational framework will be established, and the selected entities will be tasked with translating the conceptual designs into an entirely functional, contemporary, and passenger-centric airport with a secure position and offer in the Polish market. The topic of air cargo was deliberately excluded from the discussion as it is accompanied by vast unconfirmed data and political commitments, which impede the ability to make a factual assessment of the new airport's potential. Furthermore, the majority of the figures presented in media are only moderately probable and realistic. It is to be hoped that carriers will develop this segment of the market and that the economy in Poland and the region will absorb and generate the cargo transported on board.

Figure 5. *A comparison of the number of PLL LOT aircraft with other traditional carriers in Europe*



Source: *own study based on: B. Węglinski, Centralny Port Komunikacyjny a bezpieczeństwo rozwoju lotniczych przewozów pasażerskich w Polsce [in:] Rocznik Bezpieczeństwa Międzynarodowego, Volume 13, no. 1 (2019), p. 120; lufthansagroup.com, https://investor-relations.lufthansagroup.com/en/corporate-facts/fleet.html (accessed on 23 Jul, 2024); www.airfranceklm.com, https://www.airfranceklm.com/en/group/fleet (accessed on 23 Jul, 2024); britishairways.com, https://www.britishairways.com/content/information/about-ba/fleet-facts (accessed on 23 Apr, 2024)*

Conclusion

It seems that CPK, which is to replace Chopin Airport, is destined for success. Facing expansion and capacity constraints, the airport in Warsaw needs a successor guaranteeing development opportunities for decades to come. Decisions taken on the expansion of Chopin Airport allow it to generate passenger numbers capable of ensuring viability of CPK; IATA forecasts are optimistic (CPK, Jan 22nd, 2025). Observing the trends common at contemporary European airports to offer connections of both so-called traditional airlines, low-cost airlines and charter flights, it does not seem that CPK will be any different in this respect. (Cybulak, 2025). Furthermore, the cargo segment will be able to develop in CPK without the restrictions accompanying Chopin Airport today (CPK, Jan 22nd, 2025). According to the latest IATA forecast and the Development Strategy of LOT Polish Airlines, the dual role that CPK should play in Poland's airport system—a hub and point-to-point airport for our national carrier and an airport of choice for the residents of Mazovia and neighbouring regions also seems feasible. The rail network, which will be developed over time, supported by an efficient HSR network, will make it possible to attract travelers from slightly more distant regions of Poland and Europe.

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