

# INFLUENCE OF DIGITALISATION IN AIR TRANSPORT ON PASSENGER RIGHTS: CASE STUDY

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DOI 10.2478/in-2025-0026

## ABSTRACT

A European airline is completely eliminating paper boarding passes, accepting only mobile passes that require the use of an application. This means that passengers must use exclusively electronic passes, without the option to print them. But can such digital advancements be imposed against passengers' wishes? On the one hand, digitalisation simplifies the check-in process and reduces airline operational costs. On the other hand, however, many passengers still rely on paper boarding passes, making this change potentially challenging for some. Thus, is it possible to achieve the right balance between digitalisation and passengers' rights? Is the complete digitalisation of the ticketing system, at the expense of passengers' freedom of choice, legally justified? The purpose of this article is to assess the legality of such a policy in terms of its compliance with consumer protection provisions, the provisions of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR), as well as relevant provisions of aviation law.

Key words: digitalisation in air transport, air passengers' rights, personal data protection, cybersecurity

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## INTRODUCTION

Digitalisation in air transport can lead to improved efficiency and safety, reduced check-in times, increased passenger convenience, and cost savings, including lower ticket prices. Air carriers, airports, service providers and aviation authorities worldwide are investing in digital solutions to optimise flight operations.<sup>1</sup>

Areas of aviation digitalisation include automated passenger data processing, such as biometric authentication,<sup>2</sup> AI-based smart airports, e-gates and automated border control, blockchain technology for secure data management, and cybersecurity measures to protect confidential passenger information. Airlines also use predictive analytics to optimise flight routes, reduce delays, and minimise fuel consumption. Furthermore, ground handling is becoming increasingly automated. Drones and robotic vehicles are assisting in runway inspections, refuelling, and cargo handling.

The next stage of digitalisation in aviation will likely include autonomous aircraft powered by artificial intelligence, the hyper-personalisation of passenger experiences through AI and big data, and the use of quantum computers for ultra-fast data processing in air traffic management.

Aviation service providers, particularly airlines and airports, must balance technological progress with regulatory compliance, while at the same time addressing passengers' concerns about privacy.

This gives rise to a number of questions. Does digitalisation affect the quality of service provision? Does it increase the risk of breaches of passenger data protection? And is it at all possible to achieve an appropriate balance between digitalisation and the rights of air passenger?

Airlines' use of passengers' personal data speeds up identification but can also lead to biometric abuse, identity theft, use of data for commercial purposes without consent, and a lack of control over personal data within international systems.

Civil aviation is one of the most complex and technologically advanced industries, where security is of key importance.<sup>3</sup> However, with progressive digitalisation, it is becoming increasingly vulnerable to cyber threats, especially as newly introduced systems are integrated with earlier generations of IT infrastructure, which were

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<sup>1</sup> See, *inter alia*, M. Miłosz, M. Babol, *Współczesne technologie informatyczne: zagrożenia i ochrona aplikacji internetowych*, Lublin, 2014; J. La, I. Heiets, 'The impact of digitalization and intelligentization on air transportation system', *Aviation*, 2021, Vol. 25, No. 3, pp. 159–170; D. Jarach, 'The digitalisation of market relationships in the airline business: the impact and prospects of e-business', *Journal of Air Transport Management*, 2020, Vol. 8, No. 2, pp. 115–120; Y. Liu, R. Law, 'The adoption of smartphone applications by airlines', in: Cantoni L., Zhieng X. (eds), *Information and Communication Technologies in Tourism*, Heidelberg, 2013, pp. 47–57; I. Heiets, J. La, W. Zhou, S. Xu, X. Wang, Y. Xu, 'Digital transformation of airline industry', *Transportation Research Procedia*, 2022, Vol. 92.

<sup>2</sup> *Inter alia*, facial recognition, fingerprint scanning, and iris recognition, which replace traditional boarding passes and identity verification, as well as self-service kiosks and mobile boarding passes.

<sup>3</sup> For more see: R. Abeyaratne, *Convention on International Civil Aviation: A Commentary*, Cham, 2014; P.S. Dempsey, *Public International Air Law*, Montreal, 2008; M. Żylicz, *Prawo lotnicze międzynarodowe, europejskie i krajowe*, Warszawa, 2011; E. Jasiuk, R. Wosiek, *Legal conditions of international cooperation for the safety and efficiency of civil aviation*, Warszawa, 2019.

not designed with specific consideration of telecommunications vulnerabilities.<sup>4</sup> In addition, these systems are continually modified to handle increasing air traffic, potentially resulting in some currently used systems becoming susceptible to cyberattacks.<sup>5</sup> A cyberattack on aviation systems can lead to serious consequences, such as operational disruptions, breaches of passenger data protection, and even threats to flight safety. The most important aspects of cybersecurity in aviation include protecting air traffic control (ATC) systems, securing passenger and airline data, safeguarding airport infrastructure and onboard systems, and preventing hacker attacks on communications and navigation systems.<sup>6</sup>

In 2023, air navigation support systems failed in countries characterised by complex airspace structures and heavy air traffic. In January, a temporary outage occurred in the NOTAM information exchange system provided by the US Federal Aviation Administration (FAA), resulting in the grounding of all air traffic in the United States for over an hour and a half – for the first time since the 9/11 attacks.<sup>7</sup> In August of the same year, the British flight planning system provided by NATS<sup>8</sup> experienced a failure, causing delays and cancellations of hundreds of flights. Although cyberattacks were ruled out in both cases, these incidents highlighted the issue of cybersecurity vulnerabilities. This is due to the fact that such risks may arise from interconnectivity with third-party systems and infrastructure, as well as cyberattacks themselves. An analysis of existing legal solutions concerning civil liability for damage caused by cyberattacks has been undertaken in the literature, identifying three main types of damage. It is indicated that the first type may involve damage resulting from a flight delay or cancellation. Secondly, a cyberattack may lead to an aircraft accident or even the death of a passenger. Lastly, damage may also arise from breaches of personal data protection regulations.<sup>9</sup>

Apart from issues related to cyberattacks, concerns also arise regarding the protection of privacy and personal data when using AI solutions, chatbots, biometric identity controls, and similar technologies.

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<sup>4</sup> EY Polska, *Podstawowy poziom cyberdojrzałości w transporcie*, 5 October 2022; [https://www.ey.com/pl\\_pl/news/2022/10/dojrzalosc-cyberbezpieczenstwo-transport-2022](https://www.ey.com/pl_pl/news/2022/10/dojrzalosc-cyberbezpieczenstwo-transport-2022) [accessed on 26 September 2023].

<sup>5</sup> P. Kasprzyk, A. Konert, 'Wyzwania regulacyjne w zakresie cyberbezpieczeństwa w lotnictwie cywilnym', in: Brodowski L., Kuźniar D. (eds), *Wokół problematyki państwa jako podmiotu prawa międzynarodowego. Księga jubileuszowa profesor Elżbiety Dyni*, Rzeszów, 2024.

<sup>6</sup> On the issues of cybersecurity in unmanned aviation see also: M. Gregorski, 'Regulacje dotyczące bezałogowych statków powietrznych w prawie Unii Europejskiej w kontekście międzynarodowym', *Studia Europejskie*, 2017, No. 2; P. Kasprzyk, *Bezałogowe statki powietrzne. Nowa era w prawie lotniczym. Rozwój regulacji prawnych dotyczących bezpieczeństwa lotnictwa bezałogowego*, Warszawa, 2021; A. Konert, *Bezałogowe statki powietrzne. Nowa era w prawie lotniczym. Zagadnienia cywilnoprawne*, Warszawa, 2020.

<sup>7</sup> B. Rokus, 'FAA says unintentionally deleted files are to blame for nationwide ground stop', *CNN Business*, 19 January 2023; <https://edition.cnn.com/2023/01/19/business/faa-notam-outage/index.html> [accessed on 26 September 2023].

<sup>8</sup> UK Civil Aviation Authority, *Regulator to launch independent review of NATS technical failure*, 6 September 2023; <https://www.caa.co.uk/newsroom/news/regulator-to-launch-independent-review-of-nats-technical-failure/> [accessed on 26 September 2023].

<sup>9</sup> P. Kasprzyk, A. Konert, 'Wyzwania regulacyjne...', op. cit.

Due to the complexity of the subject, the analysis in this article is limited to a specific case: a European airline completely eliminating paper boarding passes and accepting only their mobile version, which requires the use of an app. This means that passengers must use exclusively electronic passes, with no option to print them. Can such digital progress be implemented against passengers' will?

The main hypothesis is as follows: digitalisation in air transport has a significant impact on passenger rights. To further refine the study, the following sub-hypothesis is identified: achieving complete digitalisation of the ticketing system is not possible without restricting air passengers' rights and freedoms. This article analyses the lawfulness of the practice of compelling passengers to use only electronic boarding passes. Accordingly, the main research question concerns the legality of imposing on passengers the obligation to use solely mobile boarding passes, including through an airline app. Numerous additional research questions arise in this context. Does this obligation infringe consumer rights? Can it be considered an abusive clause? Does it violate passenger accessibility rights? Does it contravene the provisions of the GDPR? Finally, can an airline deny boarding despite the passenger holding a paper boarding pass?

A formal-dogmatic method, consisting mainly of the analysis of EU legal norms and Polish law, is the principal research method used in this article. In addition, a case study approach is applied. The article examines the practice of the air carrier that was the first in the world to introduce the so-called paperless policy.

The legal grounds regulating air transport, including passenger rights, within both international and EU law, are widely discussed in the scientific literature. Key studies, such as those by Abeyratne, Dempsey, and Żylicz,<sup>10</sup> provide a solid foundation for understanding international conventions and the European legal framework for passenger protection. Rossi Dal Pozzo offers a detailed analysis of the EU regulations on air passenger' rights, while Fox and Domingo explore the evolution of these rights in the context of contemporary market challenges.<sup>11</sup> From a technological perspective, Heiets et al. and La and Heiets examine the impact of digitalisation on the air transport system, with particular focus on automation and smart management systems.<sup>12</sup> Jarach, in turn, analyses the digitalisation of market relations and the impact of e-business on airline operations.<sup>13</sup> Research into cybersecurity and personal data protection is a significant supplement, which is particularly important in relation to the introduction of digital boarding passes and

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<sup>10</sup> See R. Abeyratne, *Convention on International...*, op. cit.; P.S. Dempsey, *Public International...*, op. cit.; M. Żylicz, *Prawo lotnicze międzynarodowe...*, op. cit.; M. Żylicz, *Prawo lotnicze. Komentarz*, Warszawa, 2016.

<sup>11</sup> F. Rossi Dal Pozzo, *EU Legal Framework for Safeguarding Air Passenger Rights*, Cham, 2015; S.J. Fox, L.M. Domingo, 'EU Air Passengers' Rights Past, Present, and Future: In an Uncertain World (Regulation (EC) 261/2004: Evaluation and Case Study)', *Journal of Air Law and Commerce*, 2020, Vol. 85, Issue 2.

<sup>12</sup> I. Heiets, J. La, W. Zhou, S. Xu, X. Wang, Y. Xu, 'Digital transformation...', op. cit.; J. La, I. Heiets, 'The impact of digitalization...', op. cit.

<sup>13</sup> D. Jarach, 'The digitalisation of market relationships...', op. cit.

mobile applications.<sup>14</sup> The works of Artigot i Golobardes also address key issues related to procedural challenges associated with the enforcement of passenger rights, while Kunert-Diallo focuses on consumer protection in the context of jurisdiction and conflict of laws.<sup>15</sup>

This article distinguishes itself through its use of a case study centred on the paperless policy introduced by one of the largest European airlines, Ryanair. Despite the growing body of literature on digitalisation in aviation, there is a lack of detailed analysis concerning the practical consequences of implementing digital policies from the perspective of passenger rights, particularly with reference to specific air carriers. The Ryanair case study enables a demonstration of how technological changes affect accessibility, the protection and enforcement of consumer rights, and the real-world operational environment. This perspective bridges the gap between legal theory and the practice of the aviation market in the digital era, especially in relation to new challenges such as ensuring personal data security, transparency in check-in processes, and accessibility of services for diverse passenger groups.

## DIGITALISATION POLICY: A CASE STUDY

### INTRODUCTION

The European airline Ryanair plans to introduce the mandatory use of mobile boarding passes and completely eliminate their printed counterparts, becoming the first airline in the world to adopt a fully paperless policy. The check-in fee will be eliminated, and the journey is intended to become smoother and more convenient. Previously, passengers had two options: they could use a mobile boarding pass on their smartphone via an app, or print it at home and use a paper version during the journey. An alternative was also available at the check-in desk, where passengers could obtain a printed boarding pass by paying an additional fee of EUR 55.

The introduction of the so-called 'paperless policy' raises several questions and concerns, such as: What happens if a passenger does not own a smartphone? What are the consequences if the phone's battery runs out? What if the device is broken, lost or stolen? Even if the carrier retains booking details in its system in the event of the phone loss or technical problems and deems it sufficient for the passengers to identify themselves at the boarding gate using an identity document, it remains unclear how passengers will proceed through the initial security check, especially if there is no check-in desk where a boarding pass can be printed and collected. Furthermore, some destinations still require a printed boarding pass. Certain international airports do not yet accept mobile boarding passes, for example,

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<sup>14</sup> K. Gorzkowska, A. Piechocki, 'Cyberbezpieczeństwo systemów sztucznej inteligencji', *Prawo Nowych Technologii*, 2023, No. 2; P. Kasprzyk, A. Konert, 'Wyzwania regulacyjne...', op. cit.

<sup>15</sup> M. Artigot i Golobardes, 'Spain: Defeating Passengers Rights through Procedural Rules', in: Bobek M., Prassl J. (eds), *Air Passengers Rights. Ten Years On*, Oxford–Portland Oregon, 2016, pp. 205–222; A. Kunert-Diallo, *Prawa pasażerów w transporcie lotniczym*, Warszawa, 2025.

Turkish airports (with the exception of Dalaman Airport) and Tirana Airport. To fully implement digitalisation, these airports would need to modernise their systems, as they currently rely on manual inspection of printed tickets and are not equipped with digital ticket inspection devices.

The legality of requiring airline passengers to use only electronic boarding passes depends on several factors, including national legislation, the provisions of aviation authorities, and airline-specific regulations.

The central research question therefore concerns the legality of the practice of requiring passengers to use solely a mobile boarding pass, including through a mobile app, is legitimate. It is necessary to assess whether such a policy complies with consumer protection law, the GDPR, and aviation law.

### CONSUMER RIGHTS PROTECTION

In general, air carriers have discretion in determining the method by which boarding passes are used.<sup>16</sup> At present, most airlines prefer electronic boarding passes (provided via apps or e-mails) and encourage passengers to use them for reasons of convenience, efficiency, and environmental sustainability. If an air carrier offers electronic boarding passes, it may specify this requirement in its General Conditions of Carriage (GCC). Accordingly, an airline may require passengers to use only mobile boarding passes, provided this is explicitly stated in the GCC. By purchasing a ticket, passengers indicate that they have read and accepted the terms and conditions set out in the GCC, which then form part of the contract.<sup>17</sup> However, does this suffice to establish that the carrier's practice complies with consumer protection law?

One of the fundamental rights of consumers is the right to information. Airlines must ensure that passengers are informed about the available options regarding their boarding passes, including whether paper passes are still permitted. It is therefore essential to inform them appropriately.

National courts in several countries have found charging passengers an additional fee for printing boarding passes at the airport is unlawful. For instance, in 2011, Barcelona's Commercial Court ruled that a clause requiring Ryanair passengers to pay a EUR 40 fee for printing a boarding pass at the airport was abusive.<sup>18</sup> The judge held that such a fee was 'abusive' and ordered Ryanair to pay EUR 285.55 in compensation to the complainant. A boarding pass is a travel document, and

<sup>16</sup> A. Konert, *Odpowiedzialność cywilna przewoźnika lotniczego*, Warszawa, 2010; A. Kunert-Diallo, 'Kolizje praw i jurysdykcji rozstrzygane na korzyść konsumentów usług przewozu lotniczego na przykładzie wybranych orzeczeń', *Palestra*, 2004, No. 11–12; M. Artigot i Golobardes, 'Spain: Defeating Passengers Rights...', op. cit.

<sup>17</sup> See A. Kunert-Diallo, *Prawa pasażerów...*, op. cit.; J. Raciborski, *Usługi turystyczne przepisy i komentarz*, Warszawa, 1999; M. Żylicz, *Prawo lotnicze...*, op. cit., 2016.

<sup>18</sup> Commentary on the judgment of the Court of Appeal of Barcelona of 5 October 2011 in the case of *Don Santos v. Ryanair Ltd*, case No. AC 20111562, decision No. 390/2011; <https://iftta.org/news/spain-court-of-appeal-of-barcelona-regards-ryanairs-boarding-pass-printing-policy-lawful/> [accessed on 26 February 2025].

imposing an additional fee violates the provisions of the 1999 Montreal Convention. The court held that passengers should not be required to pay for a document that is necessary for travel, and that such a clause contravenes the Montreal Convention, as the cost is not comparable to optional services such as checked baggage.<sup>19</sup>

The Supreme Court in Austria also considered a case concerning an additional fee for printing a boarding pass at the airport, this time involving the airline Laudamotion. The judges described the carrier's practice as unreasonable and held that including the information only in the 'useful information' section of its regulations was insufficient. The optional fee was not displayed automatically but was instead hidden within the fare details. The court found that, in principle, a check-in fee would not be prohibited, provided it was clearly and unambiguously indicated. However, the EUR 55 fee was deemed excessive and unjustified. The judgment also noted that competitors charged significantly lower fees – if any at all – and that Laudamotion's check-in fees often exceeded the cost of the actual ticket.<sup>20</sup>

Finally, the German Competition Commission filed a lawsuit against Ryanair concerning the controversial EUR 55 check-in fee. In case No. Az 3-06 O 7/20, the Frankfurt Regional Court ruled at first instance in favour of the plaintiff. In the justification of the ruling, it was stated that Ryanair is obliged under both the Air Transport Services Regulation and the Unfair Competition Act to disclose check-in fees at the booking stage. Merely providing this information in the general conditions of carriage is insufficient, as such costs must be clearly and transparently specified. Information about the option of online check-in two days before departure – whether provided via e-mail or at the check-in desk – was held to be inadequate.<sup>21</sup>

The Court of Justice of the European Union (CJEU) has also addressed the issue of the 'final price' that must be indicated to passengers at the time of purchasing a ticket. In Case C-28/19,<sup>22</sup> *Ryanair v. Italian Competition and Market Authority* (Autorità Garante della Concorrenza e del Mercato – AGCM), the Court examined whether Ryanair engaged in unfair commercial practices while indicating air fares in the system of online booking. According to AGCM, the prices displayed failed to include certain elements classified by Ryanair as optional costs, including the passengers' online check-in fees, VAT applied to fares and optional supplements for domestic flights, and administrative fees for payments made by credit cards other than those approved by Ryanair. AGCM argued that these costs were, in fact, mandatory and were applied to consumers during the booking process, thereby increasing the actual fare. The preliminary ruling request submitted to the Court asked whether Article 23(1) of Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the

<sup>19</sup> Judgment of the Court of Appeal of Barcelona of 5 October 2011 in the case of *Don Santos v. Ryanair Ltd*, case No. AC 20111562, decision No. 390/2011.

<sup>20</sup> Judgment of the Supreme Court in Vienna of 27 February 2020 in the case of *Laudamotion GmbH*, case No. 8 Ob 107/19x; <https://www.kosesnik-langer.at/wp-content/uploads/2020/05/VKI-Laudamotion-Urteil-OGH.pdf> [accessed on 26 February 2025].

<sup>21</sup> The Frankfurt Regional Court judgment of 12 January 2021 in the case No. Az 3-06 O 7/20 related to Ryanair; <https://www.lareda.hessenrecht.hessen.de/perma?d=LARE210000408> [accessed on 26 February 2025].

<sup>22</sup> OJ C 164, 13.5.2019, p. 12.



operation of air services in the Community<sup>23</sup> should be interpreted as meaning that passengers' online check-in fees, VAT on fares and optional supplements for domestic flights, and administrative fees for certain credit card payments fall within the category of 'unavoidable and foreseeable price supplements' under the second sentence of that provision, or rather within the category of 'optional price supplements' as referred to in the fourth sentence.

According to the Court, pursuant to Article 23(1) of Regulation (EC) No 1008/2008, the final price to be paid by the customer for air services must always be indicated, inclusive of all air fares referred to in Article 2(18) of that Regulation, as well as applicable taxes and charges, surcharges and fees which are unavoidable and foreseeable at the time of publication. The third sentence of Article 23(1) of Regulation (EC) No 1008/2008 stipulates that the offer must include at least airport charges and other charges, surcharges or fees, such as those related to security or fuel, where they have been added to the air fare. The Court explained that taxes and charges, surcharges and fees referred to in the second and third sentences of Article 23(1) of Regulation (EC) No 1008/2008 must not be included within the air fare itself, but must be shown separately (CJEU judgment of 6 July 2017, *Air Berlin*, C-290/16, para. 36). It is also clear from paragraph 35 of the *Air Berlin* judgment that the various components comprising the final price to be paid, within the meaning of the second sentence of Article 23(1) of Regulation (EC) 1008/2008, must be indicated from the first time the air service price is displayed. In addition, the fourth sentence of Article 23(1) of Regulation (EC) No 1008/2008 provides that information about optional price supplements must be communicated in a clear, transparent, and unambiguous manner at the start of any booking process, and that their acceptance by the customer must be on an 'opt-in' basis. In this regard, paragraph 14 of the CJEU judgment of 19 July 2012, *ebookers.com Deutschland*, C-112/11, clarifies that the concept of 'optional price supplements' refers to supplements which are not unavoidable – unlike the final price referred to in the second and third sentences of Article 23(1) of Regulation (EC) No 1008/2008 – and which relate to services that supplement the air service itself but are neither compulsory nor necessary for the carriage of passengers. Consequently, the customer must be given the choice to accept or decline them. The Court has held that Ryanair is obliged to indicate, in its online offers for passenger carriage, from the very first display of the price, the air fare and, separately, all unavoidable and foreseeable taxes, charges, surcharges, and fees. Optional price supplements must also be indicated in a clear, transparent, and unambiguous way at the start of the booking process.<sup>24</sup>

In light of the above, it is worth considering whether including information about the requirement to use a mobile boarding pass solely within the GCC gives the carrier a disproportionate advantage over the consumer. In other words, could

<sup>23</sup> OJ L 293, 31.10.2008, p. 3.

<sup>24</sup> The CJEU case law provides that the price to be paid for the insurance of the cost of flight cancellation by the passenger or carriage of checked-in luggage should be treated as optional price supplements within the meaning of the fourth sentence of Article 23(1) of Regulation (EC) No 1008/2008 (see CJEU judgment of 18 September 2014 in the case of *Vueling Airlines*, C-487/12, para. 39).



this be considered an abusive clause? Such clauses are unlawful and non-binding, as they infringe the rights and protections granted to consumers by law.

It is necessary to adopt the view that requiring the use of mobile boarding passes exclusively may exclude passengers who face barriers in accessing or using digital technology (e.g. those without internet access or smartphones). Denying passengers a choice and obliging them to use mobile apps leads to the digital exclusion of certain social groups and may be regarded as discriminatory. As a result, this practice may constitute a violation of the legal guarantees afforded to consumers.

### *Accessibility regulations*

Passengers with disabilities or special needs may require specific accommodations, including the option to use paper boarding passes. In 2022, 27% of people in the European Union had some form of disability, meaning that one in four EU citizens had some degree of impairment.<sup>25</sup> Legal frameworks such as the Americans with Disabilities Act (ADA) in the United States<sup>26</sup> and Regulation (EC) No 1107/2006 in the European Union<sup>27</sup> require airlines to ensure equal access to services for persons with reduced mobility or special needs. Directive 2019/882, known as the European Accessibility Act (EAA),<sup>28</sup> aims to create an environment in which accessibility to products and services is not a privilege but a condition for equal participation in society, regardless of physical or mental ability. Its primary objective is

‘to contribute to the proper functioning of the internal market by approximating laws, regulations and administrative provisions of the Member States as regards accessibility requirements for certain products and services by, in particular, eliminating and preventing barriers to the free movement of certain accessible products and services arising from divergent accessibility requirements in the Member States’.

The Directive is also linked to the Convention on the Rights of Persons with Disabilities, ratified by the European Union on 23 December 2010, and is related to ‘The European Disability Strategy 2010–2020: A Renewed Commitment to a Barrier-Free Europe’, adopted by the European Commission. According to Article 4 of the Directive, Member States shall ensure that economic operators only place on the market products and only provide services that comply with the accessibility requirements set out in Annex I therein. For example, there is a requirement that the user interface must include features, elements and functions that enable persons

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<sup>25</sup> PARP. Grupa PFR, *Dyrektywa 2019/882, czyli o równym dostępie do przestrzeni publicznej*, 16 April 2024; <https://www.parp.gov.pl/component/content/article/86206:dyrektywa-2019-882-czyli-o-rownym-dostepie-do-przestrzeni-publicznej> [accessed on 8 April 2025].

<sup>26</sup> Americans with Disabilities Act of 1990; <https://www.eeoc.gov/americans-disabilities-act-1990-original-text> [accessed on 28 April 2025].

<sup>27</sup> Regulation (EC) No 1107/2006 of the European Parliament and of the Council of 5 July 2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air; <http://data.europa.eu/eli/reg/2006/1107/oj> [accessed on 28 April 2025].

<sup>28</sup> Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services; <http://data.europa.eu/eli/dir/2019/882/oj> [accessed on 28 April 2025].

with disabilities to access, perceive, operate, understand, and control the product properly.

Forcing passengers to use only electronic boarding passes may be perceived as discriminatory if certain groups – such as people who do not own smartphones or older persons who may find it difficult to access or use technology, are faced with such a disadvantage. Therefore, such a practice may constitute a violation of the guarantees provided to consumers under accessibility regulations.

### GDPR

Uniform rules for the protection of personal data are set out in Regulation (EU) No 2016/679 of the European Parliament and of the Council (GDPR). These rules also apply to the activities of air carriers, who process passengers' data at various stages of travel: from ticket booking, through check-in, to boarding pass issuance and boarding.<sup>29</sup> Data such as the ticket number (Electronic Ticket – ETKT), loyalty programme number, or barcode<sup>30</sup> contain a significant amount of information. Based on these, it is possible to obtain the reservation number, which makes it possible to log in to the travel confirmation – the so-called ITR (Itinerary Receipt) – containing all the passenger's personal data: document numbers and series, and sometimes even a phone number, address, and proof of payment with amounts paid. The air carrier must ensure that electronic boarding passes, which are often accessed via apps or e-mail links, comply with these privacy regulations. The controller is responsible for ensuring that personal data are processed lawfully and that all activities in this regard are carried out in accordance with recitals 1 and 2 and Articles 13–21 of the GDPR. The controller is also required to maintain records of these activities. In accordance with Article 5(1)(c), personal data must be adequate, relevant and limited to what is necessary for the purposes for which they are processed ('data minimisation'). Thus, the air carrier is obliged to ensure that all data collected from passengers are 'adequate' – that is, necessary and essential to fulfil the stated purpose. Who is therefore permitted to scan boarding pass codes, and who is allowed access to them? Losing control over personal data presents a risk of unauthorised use. Unfortunately, excessive data collection by controllers is frequently unjustified.

Many passengers have filed notices and complaints with the Personal Data Protection Office (UODO) regarding the manner in which Ryanair processes their personal data, expressing concerns that the airline's data collection and usage practices are inappropriate. The air carrier has, *inter alia*, introduced an additional passenger verification procedure as part of the check-in process, involving the

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<sup>29</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 – General Data Protection Regulation (GDPR), OJ L 119, 4.5.2016, p. 1.

<sup>30</sup> The barcode or QR code, depending on the air carrier, contains the following data: reservation number (PNR), ticket and fare basis information, loyalty programme details (e.g. membership card number), travel route, departure date, class, and seat number.

random selection of customers booking tickets to have their ID scanned and their face displayed on a computer or smartphone screen.<sup>31</sup>

Moreover, Ryanair has introduced a controversial policy requiring passengers who book tickets via third-party platforms, rather than directly through the airline's official website, to provide biometric data. The Irish Data Protection Regulator is currently conducting an inquiry into Ryanair's use of facial recognition technology as part of its remote customer identity verification process.<sup>32</sup> In light of the above, can requiring passengers to use electronic methods raise concerns regarding the security of their personal data? On the one hand, passengers should be given the option to use a paper alternative if they are concerned about data privacy. On the other hand, it is worth considering whether the personal data provided by a passenger differ depending on whether a paper or electronic boarding pass is used. The answer should be negative. Therefore, the issue that may raise concerns is whether passengers are required to provide *more* data when forced to use only the carrier's app, and, if so, how these data are processed. The provisions regulating the requirements for mobile apps must clearly specify what personal data are processed by the app, as well as who has access to them and under what conditions. Moreover, personal data must be processed in a manner that ensures appropriate security, including protection against unauthorised or unlawful processing and against accidental loss, destruction or damage, using appropriate technical or organisational measures (Article 5(1)(f) GDPR). It could be argued that requiring passengers to use apps may actually enhance privacy protection. Data may, in fact, be more secure in an app than on a paper boarding pass. Experience shows that passengers are often unaware of the consequences of posting images of their boarding passes on social media. Data obtained in this way can be used, for example, to conclude a loan agreement or to fraudulently claim compensation from an airline for a delayed or cancelled flight.<sup>33</sup>

In the event of the violation of the GDPR provisions, a passenger may seek compensation under Article 82 of the Regulation, which stipulates that any person who has suffered material or non-material damage as a result of an infringement of the Regulation shall have the right to receive compensation from the controller or processor for the damage suffered (paragraph 1). Any controller involved in the processing shall be liable for the damage caused by processing that infringes the Regulation. A processor shall be liable for damage only where it has failed to comply with obligations specifically directed at processors under the Regulation, or where it has acted outside or contrary to the lawful instructions of the controller (paragraph 2).

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<sup>31</sup> eTravel, *UODO bada proces przetwarzanie danych osobowych przez Ryanair*, 26 September 2023; <https://www.etravel.pl/pl/aktualnosci/960/uodo-bada-proces-przetwarzanie-danych-osobowych-przez-ryanair> [accessed on 4 April 2025].

<sup>32</sup> UODO, *Procedura weryfikacji pasażerów linii Ryanair. UODO reaguje*, 28 August 2023; <https://uodo.gov.pl/pl/138/2815> [accessed on 4 April 2025].

<sup>33</sup> See M. Walków, 'Polacy wrzucają ich zdjęcia do sieci. UODO ostrzega: te dane mogą ułatwić wyłudzenie', *money.pl*, 16 February 2025; <https://www.money.pl/gospodarka/polacy-wrzucaja-ich-zdjecia-do-sieci-uodo-ostrzega-te-dane-moga-ulatwic-wyludzenie-7124442559716160a.html> [accessed on 4 April 2025].

## AVIATION LAW: DENIED BOARDING

The European Parliament and the Council, having regard to the proposals from the Commission,<sup>34</sup> adopted Regulation (EC) No 261/2004 of 11 February 2004 establishing common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights, and repealing Regulation (EEC) No 295/91. The Regulation applies to passengers departing from an airport located within the territory of a Member State, and those departing from an airport located in a third country to an airport situated in the territory of a Member State, provided the operating air carrier of the flight concerned is a Community carrier<sup>35</sup> (unless the passengers received benefits or compensation and were offered assistance in that third country).<sup>36</sup>

In accordance with Article 3(2)(a) of Regulation (EC) No 261/2004, the Regulation applies on the condition that, firstly, passengers have a confirmed reservation on the flight concerned, and secondly, they present themselves for check-in on time. The exception to this is flight cancellation, as referred to in Article 5 of the Regulation. Although the Regulation does not define the concept of a 'confirmed reservation', the term 'reservation' is defined in Article 2(g) as 'the fact that the passenger has a ticket, or other proof, which indicates that the reservation has been accepted and registered by the air carrier or tour operator'. As for the concept of 'other proof' within the meaning of Article 2(g), the CJEU has held that if a passenger possesses such proof issued by the air carrier or tour operator, it is equivalent to a 'reservation' within the meaning of this provision (CJEU judgment of 21 December 2021, *Azurair and Others*, C146/20, C188/20, C196/20, and C270/20, para. 42, *Legalis*). These concepts should be interpreted broadly in order to ensure the high level of passenger protection referred to in recital 1 of Regulation (EC) No 261/2004.<sup>37</sup>

In the event of denied boarding, passengers are entitled to the following rights:

- (a) the right to reimbursement of the ticket price within seven days or the right to re-routing to the final destination (under comparable transport conditions, at the earliest opportunity);
- (b) the right to meals and refreshments in reasonable relation to the waiting time;
- (c) the right to hotel accommodation where necessary (e.g. in the case of a stay of one or more nights);
- (d) the right to transport between the airport and the place of accommodation;
- (e) the right to two telephone calls, telex or fax messages, or e-mails;
- (f) the right to receive compensation amounting to:
  - EUR 250 – for all flights of 1,500 kilometres or less;

<sup>34</sup> COM(2001) 784 final and DOCE C 103 E/225 of 30.4.2002. Also see, *inter alia*, A. Kunert-Diallo, *Prawa pasażerów...*, op. cit.; F. Rossi Dal Pozzo, *EU Legal Framework...*, op. cit.; S.J. Fox, L.M. Domingo, 'EU Air Passengers' Rights...', op. cit.

<sup>35</sup> The European Union air carrier means an air transport undertaking that holds a valid operating licence granted by a Member State in accordance with provisions of Council Regulation (EEC) No 2407/92 of 1992 on licensing of air carriers (Article 2(c)).

<sup>36</sup> Article 3 of the Regulation.

<sup>37</sup> Cf. the CJEU judgment of 6 March 2025, case No. C-20/24.

- EUR 400 for flights between 1,500 and 3,500 kilometres;
- EUR 600 for flights over 3,500 kilometres.

Within the scope of the research analysed in this article, it is necessary to consider the consequences a passenger may face if an airline denies them boarding for not having a mobile boarding pass. Conversely, what would happen if the passenger presented a boarding pass in paper form (e.g. a printed screenshot)? Would they then be entitled to compensation? Failure to present a boarding pass (e.g. due to theft or smartphone malfunction) may be interpreted as failure to present a 'confirmed reservation'. Since the two conditions set out in the Regulation are cumulative in nature, a passenger cannot be deemed to have presented themselves for check-in merely by holding a confirmed reservation for a given flight, and vice versa.<sup>38</sup> In such circumstances, the carrier may refuse boarding without being obliged to pay compensation to the passenger. One can imagine a hypothetical scenario in which a son books a ticket through his application and provides his father with a printed screenshot of the ticket. The father then begins his journey with only this paper printout. Could the carrier deny him boarding? If the provisions of the Regulation are interpreted literally, it appears that the requirement to present proof of a confirmed reservation would be met. In that case, a passenger who presents themselves for check-in at the appropriate time and place but is denied boarding may be entitled to compensation of EUR 250, 400, or 600, depending on the flight distance.

In the context of this analysis, it is worth noting that work is currently underway in the European Union to revise Regulation (EC) No 261/2004, which constitutes the primary legal act governing air passenger rights. On 5 June 2025, the EU Council reached a political agreement on a comprehensive update of Regulation (EC) No 261/2004. The reform seeks to adapt the Regulation to the evolving realities of the aviation market, including the increasing role of digital services, process automation, and rapidly developing booking and passenger communication channels.

The proposed changes include, *inter alia*, clarifying air carriers' obligations to provide information, new rules on compensation, and streamlining complaint procedures. The amendment also proposes increasing the delay thresholds: for EU internal flights and those up to 3,000 kilometres, from three to four hours, and for longer routes, to six hours. Corresponding changes to compensation amounts are also planned (EUR 300 instead of 250 for shorter flights, and EUR 500 instead of 600 for longer ones). At the same time, the catalogue of 'extraordinary circumstances' is being revised – for example, technical faults will no longer be automatically excluded from the right to compensation.<sup>39</sup> The ongoing legislative process confirms the relevance of the issues addressed in this article and highlights the need for further research into the impact of digitalisation on the protection of passenger rights. In particular, it will be important to monitor how future changes in EU law respond to the challenges and risks associated with digital transformation in air transport.

<sup>38</sup> Ibidem.

<sup>39</sup> European Parliament, Revision of Regulation 261/2004, procedure 2013/0072(COD), status: 'tabled', negotiations between the Commission, the Parliament and the Council of the European Union; [https://www.europarl.europa.eu/legislative-train/spotlight-JD22/file-common-rules-on-compensation-to-passengers?utm\\_source=chatgpt.com](https://www.europarl.europa.eu/legislative-train/spotlight-JD22/file-common-rules-on-compensation-to-passengers?utm_source=chatgpt.com) [accessed on 21 July 2025].

## CONCLUSION DE LEGE FERENDA

The transition to digital aviation is transforming the way in which all entities involved in the air transport process operate. This transformation affects every stage – from booking and selling flight tickets, through check-in, security checks, and baggage handling, to air traffic management and aircraft maintenance. Many airports now employ facial recognition systems and self-service bag drop kiosks, and some actively encourage passengers to use digital boarding passes to speed up the process. At Zayed International Airport in Abu Dhabi, biometric data are being used with the aim of ultimately allowing passengers to travel through the airport without presenting a single document. The International Air Transport Association (IATA) and its partners have demonstrated that the industry is ready to facilitate air travel through the use of digital documents. This has been proven through the so-called proof-of-concept (PoC) initiative. In this pilot project, two travellers used e-wallets containing their digital passports, company IDs, and loyalty programme credentials to access personalised offers, book flights, obtain visas, verify travel documents, check in, and receive boarding passes. Biometric identification enabled the passengers to navigate airport procedures in real time without having to present their documents multiple times. The successful test journey involved seven verifiable credentials (an e-passport copy, live biometric image, visa copy, company ID, loyalty programme membership, purchase order, and boarding pass), two e-wallets, and a trust register for issuer verification.

The benefits of digitalisation can be substantial, both for service providers and passengers. These include cost savings, increased operational efficiency, improved decision-making, lower maintenance costs, enhanced security, faster travel, and an overall better passenger experience. However, the challenges associated with digitalisation in air transport are often linked with privacy concerns, potential infringements of biometric data, and the digital divide affecting non-tech-savvy travellers. Other issues include overreliance on algorithms, possible bias in AI-driven decision-making, high implementation costs, and cybersecurity threats. Various public entities at international, EU, and national levels are responsible for preventing cyber threats. It is therefore essential that these bodies strengthen the security of aviation network systems and take appropriate action. A fresh examination of existing legal frameworks is needed, as current regulations do not adequately protect victims of such attacks.<sup>40</sup> The human factor remains one of the weakest links in the security system. Regular training for airline staff, air traffic controllers, and ground personnel is essential to ensure effective protection.

With regard to the research hypotheses, firstly, the arguments presented in this article indicate that the digitalisation of air transport has a significant impact on passenger rights. Secondly, achieving an appropriate balance between digitalisation and passenger rights is of crucial importance. This balance requires aligning

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<sup>40</sup> See the four proposals with regard to responsibility for cyberattack prevention: P. Kasprzyk, A. Konert, 'Wyzwania regulacyjne...', op. cit.



technological innovation with the principles of fairness, privacy, accessibility, and accountability. But how can such a balance be achieved?

Firstly, the right to privacy and personal data protection must be respected. The implementation of rigorous data protection measures, in accordance with instruments such as the GDPR, will ensure transparency in the collection, use, and storage of data. Secondly, it is important to recognise that although digital tools enhance efficiency, they may also exclude passengers who face barriers to accessing or using technology. This may apply to elderly passengers, persons with disabilities, or those without access to the internet or smartphones. Such individuals may encounter difficulties with online check-in, e-tickets, and app-based services. Providing passengers with no alternative and compelling them to use digital tools (for instance, exclusively mobile boarding passes) exacerbates the digital divide and may result in discrimination on the basis of age or disability.

If a passenger is unable to use an electronic boarding pass due to a lack of access to a smartphone, communication difficulties, or other legitimate circumstances, airlines should offer an alternative – such as issuing a paper boarding pass at the check-in desk. Failure to do so may lead to claims of discrimination and breaches of consumer rights. Thirdly, passengers must be guaranteed the right to information, particularly in the event of disruptions such as flight delays or cancellations. The use of AI-powered chatbots for basic enquiries is a positive development, but airline or airport representatives should remain available to provide more comprehensive assistance. Fourthly, biometric data must be securely stored and used solely for the intended purposes, in full compliance with aviation security and data protection regulations. Finally, passengers must be assured of the right to compensation and access to redress mechanisms where appropriate.

To conclude, in order to achieve a balance between digitalisation and passenger rights airlines must adopt a passenger-centric approach that prioritises inclusivity and transparency. Digitalisation should enhance accessibility, not create new barriers. By combining cutting-edge technologies with robust ethical standards and accountability frameworks, airlines can ensure that digital transformation strengthens, rather than undermines, passenger rights.

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**Cite as:**

Konert A. (2025), *Influence of Digitalisation in Air Transport on Passenger Rights: Case Study*, *Ius Novum* (Vol. 19) 3, 77–93. DOI 10.2478/in-2025-0026