

DOI 10.5817/MUJLT2026-41367

ANOTHER VIEW ON ARTICLE 22 GDPR: THE FUTURE OF AUTOMATED DECISION-MAKING

by

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Artificial intelligence (AI) increasingly underpins automated decision-making (ADM) in high-stakes contexts such as credit scoring, workforce management, and public service allocation, raising acute concerns about transparency, accountability, and the limits of algorithmic secrecy. This paper examines how Article 22 GDPR should be understood following the Court of Justice of the European Union's SCHUFA ruling, which resolved the prior doctrinal debate by confirming that Article 22(1) operates as a prohibition in principle, qualified by exceptions under Article 22(2) and safeguards under Article 22(3). Through doctrinal analysis of SCHUFA alongside EU national court and data protection authority decisions spanning multiple sectors, including Uber/Ola, Deliveroo/Foodinho, Buona Scuola, AMAS, Caixabank, and Grindr, the paper delineates operational criteria for when ADM is solely automated, when it reaches the significant effects threshold, and what meaningful information must substantively provide. The analysis demonstrates that intermediate algorithmic outputs can constitute ADM where they materially shape subsequent outcomes, and that nominal human review fails to satisfy Article 22 where it amounts to rubber-stamping without interpretive criteria or authority to deviate. The paper further develops a cumulative ADM doctrine: sequential or continuous automated steps may collectively trigger Article 22 where they produce aggregate effects on livelihood, credit, services, or public benefits. A key doctrinal contribution is the distinction between transactional non-selection, which does not cross the significance threshold, and positional assessment, where algorithmic flagging, downranking, or sanctioning alters an individual's standing within a system and determines future access to opportunities. The paper concludes

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that explainable AI is a legally necessary instrument for making disclosures contestation-enabling under Article 22(3), but is insufficient without institutional safeguards, including genuine human oversight, rights to challenge, data protection impact assessments, and coordination with the AI Act's risk-based framework.

KEY WORDS

Automated decision-making (ADM), Article 22 GDPR, Explainable AI (xAI), SCHUFA ruling, Algorithmic transparency, Algorithmic accountability

1. INTRODUCTION

Artificial intelligence ("AI") underpins numerous automated decision-making ("ADM") processes. In credit scoring, these concerns are pronounced because AI-driven creditworthiness assessments affect financial opportunities.¹ The European Union ("EU") General Data Protection Regulation ("GDPR")² addresses ADM in Article 22. The debate has centered on whether Article 22 functions as a general prohibition or as a right requiring active exercise.³ The Court of Justice of the European Union ("Court" or "CJEU") in its SCHUFA ruling⁴ resolved this debate by stating that Article 22(1) is a prohibition in principle, with controllers needing to establish a lawful basis under Article 22(2). The prohibition is qualified, conditioning ADM on specific exceptions and safeguards.⁵ This paper elucidates this qualified character through the

¹ Addy, W. et al. (2024) AI in Credit Scoring: A Comprehensive Review of Models and Predictive Analytics. *Global Journal of Engineering and Technology Advances*, 18 (2), pp. 118-129. Available from: <https://doi.org/10.30574/gjeta.2024.18.2.0029>; Widagdo, P. et al. (2023) Artificial Intelligence in Credit Risk: A Literature Review. *Proceeding of The International Seminar on Business, Economics, Social Science and Technology (ISBEST)*, 3 (1). Available from: <https://doi.org/10.33830/isbest.v3i1.1472>

² 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. *Official Journal of the European Union* (L 119) 4 May. Available from: <http://data.europa.eu/eli/reg/2016/679/oj> [Accessed 28 March 2026]

³ Brkan, M. (2019) Do Algorithms Rule the World? Algorithmic Decision-making and Data Protection in the Framework of the GDPR and Beyond. *International Journal of Law and Information Technology*, 27 (2), pp. 91-121. Available from: <https://doi.org/10.1093/ijlit/eay017>; Bygrave, L. A. (2019) *Minding the Machine v2.0: The EU General Data Protection Regulation and Automated Decision Making*. SSRN Electronic Journal. Available from: <https://doi.org/10.2139/ssrn.3329868>; Tosoni, L. (2021) The Right to Object to Automated Individual Decisions: Resolving the Ambiguity of Article 22(1) of the General Data Protection Regulation. *International Data Privacy Law*, 11 (2), pp. 145-162. Available from: <https://doi.org/10.1093/idpl/ipaa024>

⁴ Judgment of 7 December 2023, *OQ v Land Hessen (SCHUFA Holding)*, C-634/21, ECLI:EU:C:2023:957

⁵ Aza, A. (2024) Scores as Decisions? Article 22 GDPR and the Judgment of the CJEU in SCHUFA Holding (Scoring) in the Labour Context. *Industrial Law Journal*, 53 (4), pp. 840-858. Available from: <https://doi.org/10.1093/indlaw/dwae035>

SCHUFA ruling and EU national case law, demonstrating that explainable AI (“xAI”) is essential for satisfying the prohibition’s transparency obligations.

While focusing on credit scoring, the SCHUFA ruling raises broader issues of transparency, accountability, and algorithmic secrecy across various decision-making contexts.⁶ This paper argues that the qualified prohibition in Article 22 serves as a structural strength, enabling algorithmic systems to operate lawfully while meeting transparency requirements and the anti-rubber-stamping principle established in national case law.

The central research question examines how the SCHUFA ruling and EU national case law delineate the criteria for satisfying a qualified prohibition on ADM under the GDPR and Artificial Intelligence Act (“AI Act”).⁷ While xAI is crucial for fulfilling the transparency requirements of Article 22(3), this study argues that it alone is insufficient. The accountability framework of the GDPR and the risk-based structure of the AI Act underscore the necessity of human oversight, the right to challenge, and auditing.⁸

This study has the following structure: Section 2 reviews the scholarly debate on the right to explanation and the practical challenges of implementing transparency and xAI under Article 22. Section 3 analyzes the SCHUFA ruling and the accompanying national case law, elucidating the concrete doctrinal content of the qualified prohibition. Section 4 addresses cumulative automated decision-making across sectors. Section 5 examines the oversight framework under the GDPR and the AI Act. Section 6 concludes.

⁶ Biber, D. S. E. (2023) *Between Humans and Machines: Judicial Interpretation of the Automated Decision-Making Practices in the EU*. SSRN Electronic Journal., pp. 2-3. Available from: <https://doi.org/10.2139/ssrn.4662152>; Silveira, A. (2023) Automated Individual Decision-making and Profiling [on Case C-634/21 – SCHUFA (Scoring)]. *UNIO – EU Law Journal*, 8 (2), pp. 74-75. Available from: <https://doi.org/10.21814/unio.8.2.4842>

⁷ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence (AI Act). Official Journal of the European Union (OJ L 2024/1689) 12 July. Available from: <http://data.europa.eu/eli/reg/2024/1689/oj> [Accessed 28 March 2026]

⁸ Barredo Arrieta, A. et al. (2019) Explainable Artificial Intelligence (XAI): Concepts, Taxonomies, Opportunities and Challenges Toward Responsible AI. *Information Fusion*, 58, pp. 82-115. Available from: <https://doi.org/10.1016/j.inffus.2019.12.012>; Doshi-Velez, F. and Kim, B. (2017) *Towards A Rigorous Science of Interpretable Machine Learning*. Available from: <https://doi.org/10.48550/arxiv.1702.08608>; Kaminski, M. (2019) The Right to Explanation, Explained. *Berkeley Technology Law Journal*, 34 (1). Available from: <https://doi.org/10.15779/z38td9n83h>

2. LITERATURE REVIEW

2.1. RIGHT TO EXPLANATION

The right to explanation has emerged as a central theme in GDPR and AI governance discussions. Article 22 grants individuals the right to avoid being subjected to a decision based entirely on automated processing, which results in legal consequences or has a similarly significant impact on them. Legal scholars debate whether this establishes an explicit right to demand algorithmic explanations or merely suggests them through transparency provisions.⁹ Although the GDPR does not mandate detailed explanations for all AI decisions, its transparency obligations (Articles 13–15) and fairness requirements (Article 5) encourage controllers to provide information regarding automated decision logic.

Wachter, Mittelstadt and Floridi¹⁰ argue that the GDPR mandates certain disclosures but does not necessarily constitute a fully comprehensive right to explanation, whereas Selbst and Powles¹¹, and Kaminski¹² assert that the transparency obligations inherently require a degree of explainability that extends beyond mere procedural information. A further jurisprudential development is the position of the CJEU in *Dun and Bradstreet* (C-203/22)¹³, which clarifies that Article 15(1)(h) GDPR obliges controllers to provide relevant information and in a concise, transparent, intelligible form about the automated logic, even if a protected algorithmic trade secret is at stake.

A key interpretive question divided scholars before the CJEU's SCHUFA ruling: does Article 22(1) serve as a default prohibition, or is it a right that individuals must actively assert? The dominant perspective, supported by

⁹ Brkan, M. and Bonnet, G. (2020) Legal and Technical Feasibility of the GDPR's Quest for Explanation of Algorithmic Decisions: of Black Boxes, White Boxes and Fata Morganas. *European Journal of Risk Regulation*, 11 (1), pp. 18-50. Available from: <https://doi.org/10.1017/err.2020.10>; Hamon, R. et al. (2022) Bridging the Gap Between AI and Explainability in the GDPR: Towards Trustworthiness-by-Design in Automated Decision-Making. *IEEE Computational Intelligence Magazine*, 17 (1), pp. 72-85. Available from: <https://doi.org/10.1109/mci.2021.3129960>; Wachter, S., Mittelstadt, B. and Floridi, L. (2017) Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation. *International Data Privacy Law*, 7 (2), pp. 76-99. Available from: <https://doi.org/10.1093/idpl/ix005>

¹⁰ Wachter, S., Mittelstadt, B. and Floridi, L. (2017) *op. cit.*, pp. 76-77.

¹¹ Selbst, A. D. and Powles, J. (2017) Meaningful Information and the Right to Explanation. *International Data Privacy Law*, 7 (4), pp. 235-236. Available from: <https://doi.org/10.1093/idpl/ix022>

¹² Kaminski, M. (2019) *op. cit.*, pp. 209-213.

¹³ Judgment of 27 February 2025, *Dun & Bradstreet Austria GmbH v GL*, C-203/22, ECLI:EU:C:2025:117, paras. 55, 57–58, 66.

Brkan¹⁴, Mendoza and Bygrave¹⁵, and the Article 29 Working Party¹⁶, is that Article 22(1) establishes a prohibition in principle, placing the onus on controllers to justify automated decision-making rather than requiring data subjects to object¹⁷. The Article 29 Working Party guidelines are clear in that the provision establishes a general prohibition on solely automated decisions that produce legal or similarly significant effects, regardless of whether the data subject invokes it.

The minority perspective, as articulated by Tosoni¹⁸ and Thouvenin et al.¹⁹, interprets Article 22(1) as a right that necessitates active invocation by the data subject. However, as previously noted, the SCHUFA ruling has resolved this debate by establishing that Article 22(1) applies by default, requiring a lawful basis under Article 22(2) to justify any exception. This interpretation, which treats the provision as a restriction, offers enhanced protection. If individuals had to be informed of an automated decision and then object to trigger safeguards, the practical burden would fall disproportionately on those least equipped to handle it.

Metikoš and Ausloos²⁰ provide a systematic analysis of EU case law on the right to explanation, addressing three core interpretive questions concerning the scope of the right, the content of explanations required, and how explanation rights are balanced against competing interests. Regarding the scope, the authors identify a significant divergence among national courts regarding whether Article 15(1)(h), which requires controllers to provide meaningful information about the logic involved, applies only within the Article 22 framework or extends more broadly, a question that remains fragmented across member states. Regarding the content, the case law consistently holds that explanations must be decision-specific and contestation-enabling, a standard confirmed by the CJEU in *Dun*

¹⁴ Brkan, M. (2019) *op. cit.*, p. 99.

¹⁵ Mendoza, I. and Bygrave, L. A. (2017) *The Right Not to be Subject to Automated Decisions Based on Profiling*. Springer. Available from: https://doi.org/10.1007/978-3-319-64955-9_4

¹⁶ Article 29 Working Party. (2017) *Guidelines on Automated Individual Decision-making and Profiling for the Purposes of Regulation 2016/679*. WP251rev.01. Article 29 Working Party. Available from: <https://ec.europa.eu/newsroom/article29/items/612053> [Accessed 28 March 2026]

¹⁷ Aza, A. (2024) *op. cit.*, p. 850; Bygrave, L. A. (2019) *op. cit.*, p. 6.

¹⁸ Tosoni, L. (2021) *op. cit.*, pp. 161-162.

¹⁹ Thouvenin, F, Früh, A. and Henseler, S. (2022) Article 22 GDPR on Automated Individual Decision-Making: Prohibition or Data Subject Right. *European Data Protection Law Review*, 8 (2), p. 198. Available from: <https://doi.org/10.21552/edpl/2022/2/6>

²⁰ Metikoš, L. and Ausloos, J. (2024) The Right to an Explanation in Practice: Insights from Case Law for the GDPR and the AI Act. Available from: <https://doi.org/10.31219/osf.io/ezgxf>

and *Bradstreet* (C-203/22)²¹, which established that the primary purpose of Article 15(1)(h) is to enable data subjects to effectively exercise their rights under Article 22(3). Regarding balancing, trade secret and business interest claims cannot justify a categorical refusal to explain, although the selective disclosure permitted to protect proprietary information may limit the practical utility of the right for individuals seeking to scrutinize algorithmic outputs for bias or error.

The stakes of getting explanation rights wrong extend beyond individual cases. Pasquale²² warned that without robust transparency mechanisms, AI-driven systems in domains like credit scoring risk entrenching a "black box society" in which consequential decisions are systematically insulated from scrutiny, reinforcing power imbalances at scale. Selbst and Powles²³ expressed this concern, contending that simply revealing the logic behind models is insufficient to tackle the societal impacts of automated decision-making. Instead, the broader effects on individuals and communities demand solutions that go beyond mere technical explanations. Clifford and Ausloos²⁴ add that fairness, as a core GDPR principle, demands not only transparent processes but a proportionate balance between individual rights and legitimate business interests, a balance that opaque algorithmic systems by definition cannot demonstrate. Edwards and Veale²⁵ distil these concerns into a pointed warning, noting that the search for a right to explanation in the GDPR risks producing a "transparency fallacy", which refers to the appearance of remedy without substantive protection. These critiques collectively reinforce the argument developed in this paper: formal compliance with disclosure obligations is insufficient unless the information provided is genuinely actionable, a standard that xAI methods must meet rather than merely approximate.

The regulatory interpretation of "meaningful information" has been concretely operationalized in enforcement proceedings against Klarna Bank AB. In March 2022, the Swedish Data Protection Authority (IMY) imposed a fine due to deficiencies in transparency concerning the bank's automated

²¹ Dun and Bradstreet. *op. cit.*, par. 57.

²² Pasquale, F. (2015) *The Black Box Society: The Secret Algorithms That Control Money and Information*. Harvard University Press

²³ Selbst, A. D. and Powles, J. (2017) *op. cit.*, pp. 235-237.

²⁴ Clifford, D. and Ausloos, J. (2018) Data Protection and the Role of Fairness. *Yearbook of European Law*, 37, p. 169. Available from: <https://doi.org/10.1093/yel/yey004>

²⁵ Edwards, L. and Veale, M. (2017) *Slave to the Algorithm. Why a "Right to an Explanation" is Probably Not the Remedy You Are Looking for* [preprint]. pp. 65-67. Available from: <https://doi.org/10.31228/osf.io/97upg>

credit-decision and fraud-detection processes.²⁶ The IMY established a two-pronged standard: data controllers are required to disclose not only the categories of data processed but also the specific circumstances that invariably result in a refusal decision. Klarna's privacy notice, which merely listed data types such as contact, identification, and financial information without elucidating which combinations of factors would definitively lead to rejection, was deemed inadequate to fulfill the requirements of Articles 13(2)(f) and 14(2)(g) of the GDPR. This enforcement action solidifies the doctrinal position affirmed in *Dun and Bradstreet (C-203/22)*²⁷, which stipulates that Article 15(1)(h) of the GDPR necessitates the provision of functionally actionable information regarding automated logic, rather than merely a catalogue of inputs. When applied to credit scoring under the AI Act's Annex III 5(b), this standard mandates that documentation for high-risk systems must be sufficiently detailed to inform a data subject not only that financial data are utilized but also which specific configurations will result in an adverse outcome.

2.2. TECHNICAL AND PRACTICAL CHALLENGES

While the legal framework establishes a clear trajectory toward "actionable" transparency, the practical implementation of these mandates within AI systems remains fraught with difficulty.²⁸ Contemporary AI models, particularly those utilizing machine learning and deep neural networks, frequently function as "black boxes" with decision-making processes that are not easily interpretable.²⁹ This complexity complicates the provision of clear explanations, a difficulty further compounded by the risk that detailed insights into algorithmic processing may reveal trade secrets or proprietary information.³⁰ In practice, many data controllers encounter a disparity

²⁶ Barros Vale, S. and Zanfir-Fortuna, G. (2022) Automated Decision-Making Under the GDPR: Practical Cases from Courts and Data Protection Authorities. *Future of Privacy Forum (FPF)*, p. 21. Available from: <https://fpf.org/wp-content/uploads/2022/05/FPF-ADM-Report-R2-singles.pdf> [Accessed 28 March 2026]

²⁷ C-203/22, ECLI:EU:C:2025:117, para. 65-66.

²⁸ Eiband, M. et al. (2018) *Bringing Transparency Design into Practice*. Available from: <https://doi.org/10.1145/3172944.3172961>

²⁹ Lipton, Z. C. (2018) The Mythos of Model Interpretability. *Communications of the ACM*, 61 (10), p. 36. Available from: <https://doi.org/10.1145/3233231>; Tamò-Larrieux, A. (2021) Decision-making by Machines: Is the "Law of Everything" Enough. *Computer Law & Security Review*, 41, 105541, p. 6. Available from: <https://doi.org/10.1016/j.clsr.2021.105541>; Wang, Y. (2024) Ethical Considerations of AI in Financial Decision. *Computing and Artificial Intelligence*, 2 (1), 1290. Available from: <https://doi.org/10.59400/cai.v2i1.1290>

³⁰ Edwards, L. and Veale, M. (2017) *op. cit.*, pp. 65-67; Wachter, S., Mittelstadt, B. and Russell, C. (2017) *Counterfactual Explanations without Opening the Black Box: Automated Decisions and the GDPR*. Cornell University, p. 46. Available from: <https://doi.org/10.48550/arxiv.1711.00399>

between regulatory ideals and technological realities when attempting to implement systems that are both high-performing and transparent. However, as determined in *Dun & Bradstreet*(C-203/22)³¹, data subjects must receive an intelligible explanation of how their data are scored, even when trade secrets are cited, requiring any refusal to disclose details to be justified through a balancing test conducted by a court or supervisory authority.

One strategy to address this gap involves employing model-agnostic explanation techniques, such as local interpretable model-agnostic explanations (LIME)³² or SHapley additive explanations (SHAP)³³, which approximate model behavior near specific inputs.³⁴ While these methods provide post-hoc insights without necessitating full parameter disclosure, Doshi-Velez and Kim³⁵ caution that such partial explanations may omit critical logic or remain too abstract for laypersons. Rudin³⁶ takes this critique further, arguing that post-hoc explanations of black-box models are fundamentally inadequate for high-stakes decisions and that interpretable models should be utilized from the outset. Felzmann et al.³⁷ echo this concern, suggesting that even advanced explainability methods struggle to balance accuracy and interpretability effectively, while Miller³⁸ observes that explanations must be user-centric and context-aware to be truly effective.

The legal implications of these technical limits become particularly significant under Article 22(3) GDPR. When a data controller invokes an exception under Article 22(2), the safeguards of Article 22(3) necessitate meaningful human oversight and the ability to challenge the decision. Crucially, this obligation pertains to the comprehensibility of the output for the data subject rather than solely the technical sophistication of the

³¹ C-203/22, ECLI:EU:C:2025:117, par. 75.

³² Ribeiro, M. T., Singh, S. and Guestrin, C. (2016) "Why Should I Trust You?". *ACM Digital Library*. Available from: <https://doi.org/10.1145/2939672.2939778>

³³ Lundberg, S. and Lee, S.-I. (2017) A Unified Approach to Interpreting Model Predictions. *ArXiv* Available from: <https://doi.org/10.48550/arxiv.1705.07874>

³⁴ Klosok, M. and Chlebus, M. M. (2020) *Towards Better Understanding of Complex Machine Learning Models Using Explainable Artificial Intelligence (XAI) – Case of Credit Scoring Modelling*. In: Working Papers. Available from: <https://ideas.repec.org/p/war/wpaper/2020-18.html> [Accessed 28 March 2026]

³⁵ Doshi-Velez, F. and Kim, B. (2017) *op. cit.*, p. 5.

³⁶ Rudin, C. (2018) *Stop Explaining Black Box Machine Learning Models for High Stakes Decisions and Use Interpretable Models Instead*. Cornell University. Available from: <https://doi.org/10.48550/arxiv.1811.10154>

³⁷ Felzmann, H. et al. (2019) Transparency You Can Trust: Transparency Requirements for Artificial Intelligence Between Legal Norms and Contextual Concerns. *Big Data & Society*, 6 (1), 205395171986054. Available from: <https://doi.org/10.1177/2053951719860542>

³⁸ Miller, T. (2018) Explanation in Artificial Intelligence: Insights from the Social Sciences. *Artificial Intelligence*, 267, pp. 1-38. Available from: <https://doi.org/10.1016/j.artint.2018.07.007>

method. Tsakalakis et al.³⁹ operationalize this through a nine-dimensional typology of explanations mapped directly to Article 22(3) and the AI Act's data governance obligations for high-risk systems, such as credit scoring (Annex III 5(b)). This requirement for "actionable" information is further reinforced by sectoral standards, such as the EU Consumer Credit Directive (2023/2225),⁴⁰ which explicitly mandates explanations for creditworthiness assessments. These developments demonstrate that xAI solutions alone are inadequate without the support of human and institutional infrastructure.⁴¹

Furthermore, the implementation of fairness and non-discrimination principles remains a major obstacle. Bias in training data can systematically disadvantage protected groups, and the existence of competing fairness metrics complicates the establishment of a single definition⁴². Accountability becomes fractured when a non-transparent system produces damaging results, making it difficult to pinpoint responsibility among developers, suppliers, and implementers.⁴³ Consequently, genuine accountability necessitates organizational governance structures alongside algorithmic transparency.⁴⁴ This includes robust human oversight, which fails if it amounts to a "rubber stamp"; as Biber⁴⁵ notes, a reviewer lacking the interpretive framework, authority, or practical opportunity to arrive at a conclusion different from the automated output is effectively non-existent.

Finally, the compliance landscape is complicated by the structural distinction between the AI Act's transparency requirements and the GDPR's mandates. Nannini⁴⁶ delineates the tension between transparency as mere

³⁹ Tsakalakis, N. et al. (2024) *A Typology of Explanations for Explainability-by-Design* [preprint]. pp. 16-19, 29-30. Available from: <https://doi.org/10.31235/osf.io/d3awg>

⁴⁰ Directive (EU) 2023/2225 of the European Parliament and of the Council of 18 October 2023 on Credit Agreements for Consumers and Repealing Directive 2008/48/EC. *Official Journal of the European Union* (OJ L 2023/2225) 30 October. Available from: <http://data.europa.eu/eli/dir/2023/2225/oj> and <http://data.europa.eu/eli/dir/2023/2225/oj> [Accessed 28 March 2026]

⁴¹ Ehsan, U. and Riedl, M. (2020) Human-centered Explainable AI: Towards a Reflective Sociotechnical Approach. *ArXiv*. Available from: <https://doi.org/10.48550/arxiv.2002.01092>

⁴² Biber, D. S. E. (2023) *op. cit.*, p. 32; Kaminski, M. E. and Malgieri, G. (2020) Algorithmic Impact Assessments Under the GDPR: Producing Multi-layered Explanations. *International Data Privacy Law*, 11 (2), pp. 125-144. Available from: <https://doi.org/10.1093/idpl/11/2/ipaa020>

⁴³ Chopra, P. (2024) Ethical Implications of AI in Financial Services: Bias, Transparency, and Accountability. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 10 (5), pp. 306-314. Available from: <https://doi.org/10.32628/cseit241051017>

⁴⁴ Kaminski, M. E. and Malgieri, G. (2020) *op. cit.*, p. 127.

⁴⁵ Biber, D. S. E. (2023) *op. cit.*, p. 32.

⁴⁶ Nannini, L. (2024) Habemus a Right to an Explanation: So What? – A Framework on Transparency-Explainability Functionality and Tensions in the EU AI Act. *Proceedings of*

information provision versus genuine comprehension, suggesting that the AI Act risks producing explanations that are formally provided but substantively inadequate. This creates a risk of regulatory arbitrage, in which systems might fulfill the AI Act's documentation requirements while failing to deliver the "meaningful information" mandated by Article 15(1)(h) GDPR and *Dun & Bradstreet* (C-203/22).⁴⁷ Ebers⁴⁸ identifies a similar weakness in the AI Act's risk categorisation, arguing that its pre-defined closed risk categories reduce risk management obligations largely to risk mitigation rather than genuine risk assessment. Collectively, these challenges highlight that interpretability and accountability must be integrated from the outset,⁴⁹ reinforcing the argument that data protection impact assessments remain an indispensable governance tool that the AI Act alone cannot replace.

These multifaceted challenges suggest that the legal adequacy of an AI system depends less on its technical complexity than on the institutional safeguards surrounding it. The precise boundaries of these safeguards and the criteria for justifying automated processing under the GDPR's restrictive regime have been further clarified by recent judicial interpretations, beginning with the landmark SCHUFA decision.

3. THE SCHUFA DECISION

3.1. THE OVERVIEW OF FACTS

In December 2023, the CJEU delivered a landmark ruling on ADM under the GDPR involving SCHUFA, Germany's major credit bureau. In *OQ v Land Hessen (SCHUFA Holding)*,⁵⁰ the Court held that the automated generation of an individual's credit score could constitute "automated decision-making" under Article 22 GDPR, especially where that score significantly influences third-party loan decisions. SCHUFA had refused to disclose detailed factors and weightings of its scoring process, citing trade secrets. The Court rejected this stance, emphasizing that individuals have a right to understand and challenge automated outputs that affect them.⁵¹

the AAAI/ACM Conference on AI, Ethics, and Society, 7, pp. 1023-1035. Available from: <https://doi.org/10.1609/aies.v7i1.31700>

⁴⁷ *Dun & Bradstreet*, *op. cit.* par. 61.

⁴⁸ Ebers, M. (2024) Truly Risk-based Regulation of Artificial Intelligence How to Implement the EU's AI Act. *European Journal of Risk Regulation*, 16 (2), pp. 692-693. Available from: <https://doi.org/10.1017/err.2024.78>

⁴⁹ Tamò-Larrieux, A. (2021) *op. cit.*, pp. 15-17.

⁵⁰ of 7 December 2023, *OQ v Land Hessen*, C-634/21, ECLI:EU:C:2023:957

⁵¹ Falletti, E. (2024) Credit Scoring Under Scrutiny by the Court of Justice of the European Union: Brief Remarks on the "SCHUFA Decision. *SSRN Electronic Journal*. Available from: <https://doi.org/10.2139/ssrn.4726282>; Silveira, A. (2023) *op. cit.* pp. 75-77.

The SCHUFA ruling brings crucial clarity to the scope of automated individual decision-making. The CJEU specified that any algorithmically generated assessment qualifies as an automated decision if it significantly shapes a later outcome, such as loan approval, even if nominal human intervention occurs afterward *OQ v Land Hessen (SCHUFA Holding)*.⁵² Consequently, such intermediate automated results cannot be used to circumvent the GDPR by segmenting decisions into separate phases. The Court noted that while profiling is not strictly required for Article 22 to apply, the central factor is whether an automated process substantially impacts an individual. Consistent with this broad interpretation, nominal “human-in-the-loop” arrangements do not exempt data controllers from the regulation’s safeguards if the final decision effectively relies on automated output.⁵³

Hubková⁵⁴ provides further doctrinal grounding for this conclusion in her analysis of EU administrative ADM. Through the concept of “cyber-delegation,” she argues that even when a human official nominally processes the output of an ADM tool, the output of the machine forms the functional core of the decision. Critically, she identifies an “epistemic asymmetry” between law and computation. Legal rules require interpretive flexibility and tolerance of discretion, whereas algorithms demand precise and unambiguous rules. This implies that the choices of the programmer effectively embed legal judgments that remain invisible to the human decision-maker using the tool. Hubková⁵⁵ further distinguishes technical explainability from legal justification, arguing that an explanation of the way a system works does not satisfy the legal obligation to give reasons for a decision. Rudolf & Kováč⁵⁶ reach a complementary conclusion. By analyzing the doctrinal impact of the *SCHUFA* ruling, they confirm that preparatory documents, such as AI-generated outputs used as inputs for formally human decisions, can qualify as autonomous decisions under Article 22(1) GDPR if

⁵² *OQ v Land Hessen, op. cit.*

⁵³ Biber, D. S. E. (2023) *op. cit.* pp. 28-31; Davis, P. and Schwemer, S. F. (2023) Rethinking Decisions Under Article 22 of the GDPR: Implications for Semi-Automated Legal Decision-Making. *SSRN Electronic Journal*, pp. 3-4, Available from: <https://doi.org/10.2139/ssrn.4478107>; Tosoni, L. (2021) *op. cit.* pp. 154-156.

⁵⁴ Hubková, P. (2024) EU Administrative Decision-Making Delegated to Machines – Legal Challenges and Issues. *AUC IURIDICA*, 70 (2), pp. 102-103. Available from: <https://doi.org/10.14712/23366478.2024.25>

⁵⁵ *Ibid*, pp. 117-118.

⁵⁶ Rudolf, G. and Kováč, P. (2024) The Role of Automated Decision-Making in Modern Administrative Law: Challenges and Data Protection Implications. *Central European Public Administration Review*, 22 (2), p. 95. Available from: <https://doi.org/10.17573/cepar.2024.2.04>

they effectively predetermine the outcome. This reinforces the argument that a nominally hybrid process often functions solely as an automated one.

Article 22's reach extends beyond sophisticated machine-learning models to include simple rule-based exclusions. The Finnish Data Protection Ombudsman's 2019 decision against Svea Ekonomi illustrates this point: the DPA found that automatically excluding credit applicants based solely on an age threshold fell within Article 22(1) GDPR. The Ombudsman noted that age alone does not describe solvency or willingness to pay and therefore cannot serve as a decisive factor.⁵⁷ The controller was ordered to provide data subjects with information on the decision's logic, its role in the assessment, and its consequences. This confirms, following Hubková,⁵⁸ that the Article 22 threshold is triggered by the significant effect on the individual rather than the technical architecture of the system.

Additionally, the Court addressed the tension between trade secrecy and transparency. While businesses may protect proprietary methodologies, the CJEU has reiterated that individuals deserve sufficient information to understand and challenge significant automated decisions, thereby rejecting SCHUFA's argument that algorithmic secrecy overrode GDPR obligations.⁵⁹ This doctrine strengthens Article 22 as a practical tool for ensuring meaningful human oversight, reinforcing the need for xAI to make automated processes contestable. Although arising from credit scoring, the Court's reasoning applies to a broad range of high-stakes AI contexts, from employment screening to social-benefits determination.⁶⁰

3.2. THE LESSONS LEARNED FROM THE DECISION

The recent *SCHUFA* ruling reaffirms that organizations utilizing AI-driven credit scoring, or any high-stakes ADM, must prioritize transparency and fairness as fundamental principles of the GDPR *OQ v Land Hessen (SCHUFA Holding)*.⁶¹ Furthermore, the ruling foreshadows the way the AI Act intensifies these obligations. The Court clarified that individuals are entitled to "meaningful information" regarding the logic and implications of automated decisions that affect them *OQ v Land Hessen (SCHUFA Holding)*.⁶² Although credit bureaus may seek to protect trade secrets, the CJEU determined that commercial confidentiality does not supersede the data protection rights of individuals. This decision underscores the imperative

⁵⁷ Barros Vale, S. and Zafir-Fortuna, G. (2022) *op. cit.* p. 46.

⁵⁸ Hubková, P. (2024) *op. cit.* p. 105.

⁵⁹ Falletti, E. (2024) *op. cit.*; Silveira, A. (2023) *op. cit.* pp. 80-81.

⁶⁰ Aza, A. (2024) *op. cit.* p. 855-856; Biber, D. S. E. (2023) *op. cit.*

⁶¹ *OQ v Land Hessen, op. cit.* paras 56-57, 63-66.

⁶² *Ibid.* paras. 56, 63.

of procedural fairness, as highlighted by Clifford & Ausloos⁶³, ensuring that data subjects can comprehend and contest decisions with significant impact.

Significantly, the *SCHUFA* decision highlights the necessity for substantive human intervention. Article 22 of the GDPR mandates that any "human in the loop" must genuinely evaluate automated outcomes rather than merely approve them without scrutiny.⁶⁴ In practice, organizations must strike a balance between avoiding information overload and providing sufficient detail to empower individuals.⁶⁵ The European Data Protection Board ("EDPB") has endorsed the guidelines of the Article 29 Working Party on automated decision-making, confirming the continued authority of those guidelines under the GDPR.⁶⁶ Whittlestone et al.⁶⁷ similarly emphasize that explanations must be intelligible, actionable, and tailored to the intended audience.

An instructive decision by the Portuguese Data Protection Authority (CNPd) in May 2021 anticipated the anti-rubber-stamping doctrine confirmed in *SCHUFA*. This decision involved the assessment of a university regarding the proposed implementation of examination-proctoring software.⁶⁸ The software analyzed the biometric patterns of students via webcam footage to generate a fraud-likelihood score, which professors would use to determine whether to investigate potential irregularities. The university contended that no qualifying ADM existed because professors retained the final authority for decisions. However, the CNPD dismissed this argument, noting that the absence of specific guidelines on the interpretation of scores and the lack of guiding criteria for teachers could lead teachers to validate the decisions of the systems as a rule.⁶⁹

This formulation is particularly significant. What disqualifies a nominally human decision-maker from preventing a "solely automated" classification is precisely the absence of criteria that would enable coherent deviation from the automated output. A human lacking both an interpretive framework and the authority to reach an independent conclusion is functionally equivalent to no human at all, a conclusion subsequently confirmed by the CJEU in

⁶³ Clifford, D. and Ausloos, J. (2018) *op. cit.* pp. 26-28.

⁶⁴ *OQ v Land Hessen, op. cit.* paras. 54, 66.

⁶⁵ Felzmann, H. et al. (2019) *op. cit.*

⁶⁶ Article 29 Working Party. (2017) *op. cit.*

⁶⁷ Whittlestone, J. et al. (2019) The Role and Limits of Principles in AI Ethics. *ACM Digital Library*. Available from: <https://doi.org/10.1145/3306618.3314289>

⁶⁸ Barros Vale, S. and Zanfira-Fortuna, G. (2022) *op. cit.* p. 34.

⁶⁹ *Ibid.*

SCHUFA and operationalized in the 2023 Uber appellate decision.⁷⁰ Sarra⁷¹ generalizes this principle doctrinally: the "solely automated" threshold is satisfied unless the controller can demonstrate that a human has specifically and materially intervened in the individual decision in a manner that would have altered the outcome. General monitoring is insufficient, and the burden of proof rests with the controller. This standard aligns directly with case law. What was absent in the CNPD and the 2023 Uber appellate decision, and present in *Caixabank* as explained below, is precisely a demonstrable and outcome-determinative human contribution to the specific decision under review.

These developments must be contextualized within the existing framework of cases in which genuine human judgment was deemed sufficient to exclude a process from Article 22. In January 2021, the Spanish Data Protection Authority (AEPD) determined that Caixabank's client-profiling practices did not constitute ADM under Article 22(1) because the bank's employees exercised independent judgment in making individual credit and pricing decisions based on profiled data.⁷² Notably, the AEPD imposed a combined fine of €6 million for transparency violations, as Caixabank failed to adequately inform data subjects about the profiles being constructed and relied on invalidly bundled consent. This outcome exemplifies a recurring structural pattern in case law: avoiding Article 22 qualification does not exempt controllers from compliance obligations under Articles 5, 6, 13, and 14 of the GDPR.

Furthermore, in a 2022 decision regarding Grindr's content-moderation algorithm, the AEPD found no Article 22 violation because employees analyzed automated signals before deciding whether to remove content or block accounts.⁷³ While this outcome initially appeared straightforward, *post-SCHUFA*, the question is no longer whether a human reviews the output, but whether that human possesses the substantive capacity and procedural opportunity to reach a different conclusion from the indication of the automated system. In scenarios where content moderation scales to millions of items per day, the factual basis for genuine independent human review, rather than the systematic validation of algorithmic signals, must

⁷⁰ Gerechtshof Amsterdam (No. 200.295.747/01). (2023). Available from: <https://uitspraken.rechtspraak.nl/details?id=ECLI:NL:GHAMS:2023:796> [Accessed 28 March 2026]

⁷¹ Sarra, C. (2025) Artificial Intelligence in Decision-making: A Test of Consistency Between the "EU AI Act" and the "General Data Protection Regulation." *Athens Journal of Law*, 11 (1). pp. 57-58. Available from: <https://doi.org/10.30958/ajl.11-1-3>

⁷² Barros Vale, S. and Zanfir-Fortuna, G. (2022) *op. cit.* p. 32.

⁷³ *Ibid.*

be scrutinized against the CNPD proctoring standard: are there interpretive guidelines, independent criteria, and a genuine opportunity to deviate?

Transparency requirements are essential components of xAI strategies,⁷⁴ however, they create tensions between regulatory compliance and proprietary interests. As noted by the Court, the refusal to disclose algorithmic factors or weightings obstructs data subjects' rights under the GDPR.⁷⁵ Kaminski⁷⁶ cautioned that inadequate explanations could render organizations vulnerable to legal liability and penalties. The AI Act similarly mandates interpretable and accountable AI systems, compelling credit-scoring providers to balance disclosure obligations with the protection of intellectual property.⁷⁷ A concurrent obligation of fairness arises from both the GDPR and the AI Act. Fairness involves preventing discriminatory outcomes through the use of high-quality, representative training data and implementing robust oversight procedures.⁷⁸ In the context of credit scoring, fairness also depends on continuous bias audits and accessible mechanisms for individuals to contest unjust outcomes. This aligns with Clifford and Ausloos⁷⁹ dual framework, wherein procedural fairness necessitates transparent decision-making, while fair balancing seeks to harmonize data subjects' rights with legitimate business interests.

⁷⁴ Binns, R. and Veale, M. (2021) Is That Your Final Decision? Multi-stage Profiling, Selective Effects, and Article 22 of the GDPR. *International Data Privacy Law*, 11 (4), pp. 319-332. Available from: <https://doi.org/10.1093/idpl/ipab020>

⁷⁵ OQ v Land Hessen, *op. cit.* paras. 63–66.

⁷⁶ Kaminski, M. (2019) *op. cit.*

⁷⁷ Smuha, N. A. (2021) From a “Race to AI” to a “Race to AI Regulation”: Regulatory Competition for Artificial Intelligence. *Law, Innovation and Technology*, 13 (1), pp. 63-65. Available from: <https://doi.org/10.1080/17579961.2021.1898300>; Veale, M. and Borgesius, F. (2021) Demystifying the Draft EU Artificial Intelligence Act. *ArXiv* Available from: <https://doi.org/10.48550/arxiv.2107.03721>

⁷⁸ Karsai, K. (2021) Algorithmic Decisions within the Criminal Justice Ecosystem and Their Problem Matrix. *International Review of Penal Law / Revue Internationale de Droit Pénal*, 92 (1), pp. 13-30; Karsai, K. (2024) The Use of Algorithms to Support Judicial Decision-Making in Criminal Matters with a Special Focus on Trial Decisions. *Studia Iuridica Lublinensia*, 33 (5), pp. 103-124. Available from: <https://doi.org/10.17951/sil.2024.33.5.103-124>

⁷⁹ Clifford, D. and Ausloos, J. (2018) *op. cit.* pp. 38-39.

4. CUMULATIVE ADM AND ARTICLE 22 GDPR

4.1. THE CUMULATIVE ADM DOCTRINE

Article 22 of the GDPR is typically applied in contexts involving a single, high-stakes automated decision. However, recent scholarly work and the case law examined in this section reveal that continuous or sequential automated processing can collectively exert an impact on individuals that is equally significant to any isolated determination.⁸⁰ Indeed, in some instances, this cumulative effect is more pervasive. The qualified prohibition framework affirmed in the *SCHUFA* is particularly well suited to addressing this phenomenon. Once an automated process generates effects that substantially influence an individual's access to employment, credit, services, or public benefits, Article 22(1) is activated. This requires the controller to establish a lawful basis under Article 22(2), alongside the safeguards of Article 22(3).

A brief methodological note is warranted regarding the utilization of national court and DPA decisions to substantiate an EU-wide doctrinal argument. Article 22 is a directly applicable provision of EU law, characterized by a uniform text, structure, and purpose across all member states; the guidance of the CJEU interpretively governs its national adjudication. The harmonization role of the EDPB under Article 70 GDPR, along with the endorsement of a consistent "significant effects" standard, ensures that enforcement practices converge across member states, even in the absence of a ruling by the CJEU on every factual scenario. The decisions examined in the subsequent section encompass multiple sectors, including gig-economy platform management, public employment services, food delivery, and financial and insurance products, and originate from several member states. Their breadth is analytically significant. It demonstrates that the cumulative ADM scope and significance threshold are not artifacts of any particular national legal culture or economic sector. Instead, they represent a consistent and uniform doctrinal response to the structural characteristics of automated processing, where individual steps may be unremarkable while the aggregate effect is substantial.

Binns and Veale⁸¹ underscore the doctrinal complexities that arise in multistage profiling contexts, emphasizing the ambiguity in determining the location of the decision and whether significance should be assessed based on each individual outcome or the cumulative effect. Concentrating solely on a final and singular output may obscure the impact of preceding automated processes that effectively predetermined results. This perspective transitions the Article 22 inquiry from a binary evaluation of a single decision to a more

⁸⁰ Brkan, M. (2019) *op. cit.*

⁸¹ Binns, R. and Veale, M. (2021) *op. cit.*

nuanced analysis of decision systems as they evolve over time. Importantly, when a controller structures an automated process as a sequence of minor steps to avoid the appearance of a singular decisive moment, regulators and courts may prioritize substance over form. Davis and Schwemer⁸² contend that the term "decision" in Article 22 should be interpreted broadly to encompass algorithmic recommendations and intermediate outputs that effectively shape the fate of an individual. This approach is consistent with the protective purpose of the GDPR: to prevent individuals from being subjected to unchecked algorithmic power, whether exerted in a single instance or through a series of individually minor steps.

4.2.THE QUALIFIED PROHIBITION IN PRACTICE: SECTORAL EVIDENCE

The doctrinal framework has been evaluated across various sectors. The case law analyzed in this section illustrates the consistent application of the qualified prohibition of Article 22. In contexts such as gig-economy platforms, public-sector employment services, and financial and insurance products, national courts and data protection authorities (DPAs) have consistently determined that continuous automated processing meets the significance threshold when it determines or materially influences individuals' access to income, employment, credit, or public benefits.

Gig-economy platform management provides the most extensively litigated illustration. The ride-hailing platform of Uber continuously processes the data of drivers to carry out a series of consequential automated operations: matching drivers with ride requests, setting dynamic prices, detecting fraud signals, and deactivating accounts for alleged violations. Dutch litigation against Uber and its competitor Ola, spanning first-instance judgments in 2021 and an appellate ruling in 2023, charted the significance threshold with precision.⁸³ The Amsterdam District Court declined to find Article 22 violations in relation to temporary fraud-flag suspensions and ride-allocation decisions, treating the former as reversible and the latter as producing only short-term economic effects insufficient to meet the "impactful, long-term or lasting" standard.⁸⁴ By contrast, the same court held that Ola's automated performance-based fines crossed the threshold. Such

⁸² Davis, P. and Schwemer, S. F. (2023) *op. cit.* pp. 3-4.

⁸³ Gerechtshof Amsterdam (2023). *op. cit.*; Rechtbank Amsterdam (No. C/13/692003 / HA RK 20-302) (2021). para. 4.19, 4.24. Available from: <https://uitspraken.rechtspraak.nl/details?id=ECLI:NL:RBAMS:2021:1018> [Accessed 28 March 2026]; Rechtbank Amsterdam (No. C/13/689705 / HA RK 20-258) (2021). paras. 3.1, 4.25, 4.45, 4.47, 4.49, 4.52. Available from: <https://uitspraken.rechtspraak.nl/details?id=ECLI:NL:RBAMS:2021:1019> [Accessed 28 March 2026]

⁸⁴ Barros Vale, S. and Zafir-Fortuna, G. (2022) *op. cit.* p. 36.

penalties have effects that are important enough to deserve attention and significantly affect the conduct or choices of the person concerned, amounting to sanctions that alter the contractual rights of drivers. The court prohibited Ola from continuing this practice, recognizing that even individually modest fines produced a profound cumulative effect on livelihood and behavior.

The procedural sequencing of first-instance cases is instructive for the cumulative ADM argument. Barros Vale & Zanfira-Fortuna⁸⁵ note that the court considered the substantive impact of automated practices on the basis of the available facts before turning to the evidentiary burden of the claimants. The implication is consequential: where longitudinal evidence establishes demonstrable aggregate harm, such as income suppression, systematic access restriction, or behavioral modification over time, a court may apply Article 22 even to individually innocuous automated allocations. The doctrinal challenge for claimants is evidence rather than legal principles.

The 2023 Uber appellate decision resolved a more difficult question: whether account termination through automated fraud detection, nominally reviewed by human staff in Kraków, constituted solely automated processing. The Amsterdam Court of Appeal found that four drivers had been deprived of their livelihoods through algorithmic termination without any genuine opportunity to be heard and that Uber could not substantiate the nature of the alleged human involvement. Accordingly, the court rejected the thin veneer of human oversight and applied Article 22, invoking Article 15(1)(h) GDPR to compel Uber to disclose the algorithms and criteria used in firing decisions.⁸⁶ The case confirmed what Biber⁸⁷ identified as an emerging judicial consensus: the determinative factor is the effect on the individual, not the form in which the decision is structured. Metikoš and Ausloos⁸⁸ synthesize this jurisprudential trajectory, observing that the standard for meaningful human oversight has crystallized around a demanding substantive test. The reviewer must be technically capable of understanding the automated output, procedurally empowered to hear the data subject, and institutionally positioned to reach different conclusions. The remote reviewers of Uber plainly did not meet this test.

The same doctrinal logic was applied by the Italian Data Protection Authority (Garante) to food delivery platforms. In its investigation of Deliveroo, Garante found that an automated rider-ranking system determining access to peak-hour delivery slots constituted a qualifying

⁸⁵ Barros Vale, S. and Zanfira-Fortuna, G. (2022) *op. cit.* p. 37.

⁸⁶ Gerechtshof Amsterdam (2023). *op. cit.*

⁸⁷ Biber, D. S. E. (2023) *op. cit.* pp. 35-36.

⁸⁸ Metikoš, L. and Ausloos, J. (2024) *op. cit.* pp. 13-15.

ADM under Article 22(1). Even if no single shift assignment was decisive in isolation, the pattern of automated allocation materially shaped riders' earnings and career prospects.⁸⁹ In the parallel June 2021 decision concerning Foodinho, Garante specifically rejected the argument that the system escaped Article 22 classification because its parameters had been manually configured by employees. The design-stage involvement of humans does not prevent the runtime application of algorithmic rules from constituting "solely automated" processing. Once deployed, the algorithm operates without case-by-case human input, and Article 22 governs the deployment stage decision.⁹⁰ Together, Deliveroo and Foodinho establish that the algorithmic management of gig workers systematically meets Article 22(1) significance threshold wherever access to income-generating opportunities is at stake.

This qualified prohibition applies with equal force in the public sector, where algorithmic classification systems can determine individuals' access to services and administrative support over extended timeframes. The Italian *Buona Scuola* litigation and the Austrian AMAS case illustrate this with complementary force. In *Buona Scuola*, the Italian Council of State (*Consiglio di Stato*) delivered a landmark 2019 judgment treating the rule-based algorithm of the Ministry of Education for assigning teachers to schools as equivalent to any other administrative act for purposes of legal oversight.⁹¹ The court acknowledged that serial or standardized mass-decision processes can be efficient but warned that public authorities cannot use automation to circumvent the principles governing administrative activity. Full disclosure of the existence of automated decision processes and the algorithms employed was required by the transparency principle, together with adequate opportunities for human intervention and redress. Although argued in administrative-law terms rather than under the GDPR directly, the insistence of the court on transparency and contestability precisely echoes the safeguards of Article 22(3), namely, the right to obtain an explanation, to express one's view, and to contest the outcome.

The Austrian AMAS case confirms that the cumulative significance argument applies to public sector classification systems, irrespective of whether any single output directly terminates an entitlement. The Austrian Public Employment Service deployed the AMAS to classify jobseekers into three tiers based on predicted employment probability, taking into account age, gender, education, caring duties, and health status. Counselors used this

⁸⁹ Barros Vale, S. and Zafir-Fortuna, G. (2022) *op. cit.* pp. 38-39.

⁹⁰ Barros Vale, S. and Zafir-Fortuna, G. (2022) *op. cit.* p. 13.

⁹¹ Galetta, D.-U. and Pinotti, G. (2023) Automation and Algorithmic Decision-Making Systems in the Italian Public Administration. *CERIDAP*, 2023 (1), pp. 13-23. Available from: <https://doi.org/10.13130/2723-9195/2023-1-7>

classification to allocate support resources, channeling intensive assistance to the middle tier and reducing support to those in the low-opportunity group.⁹² The Austrian Data Protection Authority (Datenschutzbehörde) found the processing unlawful; on appeal, the Federal Administrative Court (BVwG) overturned that finding on the basis of statutory public interest justification. Notwithstanding the outcome on lawfulness, the case confirms the cumulative significance point: assignment to the low-opportunity tier systematically determines access to support, generates a lasting record within public administration, and may influence future interactions across connected systems. Therefore, Article 22 of the analysis in the public sector must engage with the long-run administrative consequences of algorithmic classification, not merely its immediate and discrete output.

Beyond gig-economy and public-sector contexts, the cumulative ADM doctrine operates wherever automated systems generate sequences of consequential processing whose aggregate effect crosses the Article 22(1) significance threshold. During recruitment, algorithmic filtering that systematically prevents categories of applicants from reaching a human reviewer significantly affects employment prospects, even if no individual rejection appears material in isolation.⁹³ In fintech, continuous machine-learning recalibrations of credit limits, suspension scores, and dynamic pricing constitute an ongoing automated assessment whose cumulative financial effect may be substantial, even when no single adjustment is dramatic. The personalized rates decision regarding car-sharing by Garante,⁹⁴ confirmed by the Italian Supreme Court in November 2021, established that continuous behavioral scoring constitutes profiling under Article 4(4) GDPR. The aggregate financial effect of daily recalibration can be substantial, even if no single adjustment is trivial. The *Creditinfo* decision of the Icelandic DPA⁹⁵ adds a cross-sectoral clarification: satisfying Article 15 access obligations by disclosing score factors does not displace Article 22 analysis, which runs in parallel. In healthcare, AI-driven triage and deterioration-risk systems engage Article 22 wherever clinicians lack the interpretive criteria or practical opportunity to deviate from algorithmic outputs, a gap Van Kolfshooten⁹⁶ identified as critical in EU health data law. Across credit, insurance, employment, healthcare, and public

⁹² Barros Vale, S. and Zanfir-Fortuna, G. (2022) *op. cit.* p. 16.

⁹³ Binns, R. and Veale, M. (2021) *op. cit.*

⁹⁴ Barros Vale, S. and Zanfir-Fortuna, G. (2022) *op. cit.* p. 7.

⁹⁵ Barros Vale, S. and Zanfir-Fortuna, G. (2022) *op. cit.* p. 46.

⁹⁶ Van Kolfshooten, H. B. (2024) A Health-conformant Reading of the GDPR's Right Not to be Subject to Automated Decision-making. *Medical Law Review*, 32 (3), pp. 373-391. Available from: <https://doi.org/10.1093/medlaw/fwae029>

benefits, Article 22 is engaged wherever algorithmic classification produces meaningful downstream effects on access to services or opportunities, whether these effects materialize immediately or accumulate over time.

Content moderation represents a domain where Article 22 analysis is complicated by the entry into force of the Digital Services Act (“DSA”)⁹⁷, which now provides the primary EU framework governing automated content-removal and account-suspension decisions for very large online platforms. Whether Article 22 of the GDPR applies in parallel to content moderation decisions that also involve user data profiling remains an open question.⁹⁸ This study does not purport to resolve this issue; the gig-economy and public-sector case law surveyed above provides a more analytically settled illustration of how cumulative automated processing engages in the qualified prohibition of Article 22.

5. BALANCING ACCOUNTABILITY AND INNOVATION: OVERSIGHT OF CUMULATIVE ADM

Robust oversight of cumulative ADM requires a calibrated approach. It is imperative to implement robust oversight mechanisms to prevent the subtle erosion of individual rights through the aggregate functioning of opaque algorithms. However, regulators must avoid adopting an excessively rigid stance that could impede beneficial innovations and the efficient utilization of AI. Data protection law, particularly when interpreted in conjunction with sector-specific regulations, provides mechanisms to achieve this balance by prioritizing accountability and transparency over outright prohibiting automation.

A fundamental aspect of the approach of the GDPR to algorithmic accountability is the mandate for data protection impact assessments (DPIAs) for high-risk processing under Article 35 GDPR. Kaminski and Malgieri⁹⁹ note that DPIAs serve as a form of systemic oversight that complements individual rights, effectively functioning as a “suitable safeguard” when organizations deploy automated decision systems. In the context of cumulative decision-making, a DPIA compels controllers to assess not only each decision in isolation but also the cumulative impact of an AI system on data subjects over time. For instance, a gig platform implementing an algorithmic management tool should evaluate whether its continuous

⁹⁷ Regulation (EU) 2022/2065 of the European Parliament and of the Council on a Single Market for Digital Services (Digital Services Act). *Official Journal of the European Union* (L 277) 19 October. Available from: <http://data.europa.eu/eli/reg/2022/2065/oj> [Accessed 28 March 2026]

⁹⁸ Davis, P. and Schwemer, S. F. (2023) *op. cit.* pp. 6-7.

⁹⁹ Kaminski, M. E. and Malgieri, G. (2020) *op. cit.* pp. 129, 132.

automated processing and algorithmic management of workers could collectively have a significant effect on the rights and freedoms of those workers. By documenting risks and measures to mitigate them, such as periodic human review of outcomes, bias testing, or setting impact thresholds that trigger human intervention, the controller both complies with the GDPR and potentially prevents harm before it materializes.

Regulators can promote industry-specific algorithmic impact assessments that extend the DPIA concept, ensuring multi-layered explanations and accountability at design stages.¹⁰⁰ Importantly, this ex-ante oversight does not prohibit automated decisions; rather, it requires foresight and responsibility from those who develop and deploy such systems. Kaminski and Malgieri describe this as a shift from mere compliance to an ethic of collaborative governance, where organizations, experts, and regulators collaborate to align AI innovation with data protection values.¹⁰¹ By mandating internal checks like DPIAs and auditing without dictating the precise design of algorithms, the risk-based framework of the GDPR aims to protect individuals while allowing beneficial data-driven practices to evolve under vigilant oversight.

The relationship between the DPIA framework of the GDPR and the Fundamental Rights Impact Assessment (FRIA) under Article 27 of the AI Act is characterized by considerable complexity. Rintamäki et al.¹⁰² conduct an empirical analysis mapping DPIA obligations across all 27 EU Member States against the high-risk classifications of the AI Act, revealing significant regulatory divergence and fragmentation. Their study indicates that sectors with substantial overlap between GDPR high-risk processing and AI Act Annex III categories, such as credit scoring under Annex III 5(b) and employment under Annex III 4, are precisely where coordination failures between national DPAs and the supervisory framework of the AI Act are most pronounced.

Rintamäki et al.¹⁰³ demonstrate that no current DPIA guidance of any member state fully aligns with the requirements of the FRIA, resulting in compliance uncertainty for organizations deploying high-risk AI systems that also process personal data. In the context of Article 22 of the GDPR, this suggests that a DPIA conducted without reference to the FRIA requirements of the AI Act may fail to encompass the full range of systemic risks

¹⁰⁰ Kaminski, M. E. and Malgieri, G. (2020) *op. cit.* pp. 139-140.

¹⁰¹ Kaminski, M. E. and Malgieri, G. (2020) *op. cit.* p. 131.

¹⁰² Rintamäki, T. et al. (2024) *Impact Assessment Requirements in the GDPR vs the AI Act: Overlaps, Divergence, and Implications* [preprint]. Available from: <https://doi.org/10.31219/osf.io/6ghzj>

¹⁰³ Rintamäki, T. et al. (2024) *op. cit.* pp. 25-26.

posed by credit scoring or algorithmic management systems to the rights of data subjects, thereby reinforcing the need for formally coordinated impact assessments. Sarra¹⁰⁴ identifies a more fundamental tension: the human oversight principle under Article 14 of the AI Act mandates competent human monitoring of high-risk AI systems, yet meaningful human involvement is precisely what excludes a decision from the scope of Article 22 GDPR. Consequently, a controller complying with the AI Act may inadvertently negate the stronger protections of Article 22, replacing them with the narrower and residual explanation right of Article 86 of the AI Act instead of the rights to contestation and human intervention found in the GDPR. The proposed solution of Sarra, that only a specific, traceable, and outcome-determinative human intervention suffices to displace Article 22, is further examined in Section 3.2.

The structure of Article 22, which permits ADM when the conditions of Article 22(2) are satisfied and the safeguards of Article 22(3) are operational, inherently reflects an appropriate balance. This provision conditions automation on genuine accountability rather than prohibiting it outright. Regulators can enhance this balance by clarifying that the information obligations under Articles 13–15 of the GDPR apply continuously for cumulative processing, rather than solely at the point of an initial decision. Furthermore, they should confirm that the human oversight mandated by Article 22(3) necessitates real interpretive capacity and the authority to deviate. Standards-based guidance that articulates criteria for when sequential automated processing crosses the significance threshold, similar to the criteria identified in Section 4.1, would enable organizations to design compliant systems proportionately. At the EU level, the DPIA framework of the GDPR and the conformity assessments of the AI Act serve as natural complements. When used together, they can ensure that high-risk automated systems are evaluated both technically and for their impact on individual rights prior to deployment.

Almada¹⁰⁵ offers a sector-specific examination of the implications of the AI Act for financial services, with particular pertinence to the credit-scoring context central to the *SCHUEA* litigation. By analyzing the risk-based architecture of the AI Act within the framework of financial regulation, Almada affirms that credit scoring under Annex III 5(b) exemplifies a scenario where the high-risk classification of the AI Act directly intersects with the procedural safeguards of Article 22 GDPR. He highlights the concern

¹⁰⁴ Sarra, C. (2025) *op. cit.* pp. 52-55.

¹⁰⁵ Almada, M. (2025) The EU AI Act: Logic, Content, and Implications for Finance. SSRN *Electronic Journal*. Available from: <https://doi.org/10.2139/ssrn.5125735>

that the AI Act may pose a barrier to AI innovation in European financial markets.¹⁰⁶ This paper contends that this concern is best addressed not by relaxing transparency and oversight standards, but by ensuring that the qualified prohibition framework of Article 22 GDPR provides the doctrinal flexibility necessary to accommodate beneficial ADM while requiring genuine accountability mechanisms that are operationally proportionate to the scale and nature of the automated process involved.

6. CONCLUSION

The case law surveyed in this paper demonstrates that Article 22 GDPR functions as a qualified prohibition. It is a conditional framework that permits ADM where a lawful basis under Article 22(2) is established and the safeguards of Article 22(3) are genuinely operative, carrying real substantive weight in each of those conditions. The ruling of the CJEU in *SCHUFA* confirmed the default applicability of the prohibition and its resistance to circumvention through trade secrecy. Meanwhile, national case law, spanning *Buona Scuola*, *Uber/Ola*, *Deliveroo*, *Foodinho*, the Austrian *AMAS* litigation, and the *Grindr* decision of the Spanish AEPD, has given the qualified character of that prohibition its concrete operational content. Article 22 is engaged wherever automated processing produces effects that meaningfully shape the access of an individual to employment, credit, services, or public benefits, whether through a single high-stakes decision or the accumulation of sequential automated processing steps whose aggregate impact crosses the significance threshold.

What that threshold requires can now be stated with doctrinal precision. The determinative distinction is between transactional non-selection and positional assessment. Transactional non-selection occurs when an automated process fails to connect a data subject with a particular opportunity on a given instance; examples include a ride that is not assigned, a delivery slot that is not offered, or a job posting that is not surfaced. Such outcomes are reversible, leave the data subject's standing within the platform intact, and produce no record that shapes future interactions. In contrast, a positional assessment occurs when the algorithm renders a judgment about the individual, such as flagging, penalizing, downranking, or reclassifying them on the basis of a behavioral evaluation that alters their position within the system and thereby shapes the universe of opportunities available to them going forward.

An automated output crosses the significance threshold of Article 22(1) when it constitutes a positional assessment of this kind: one that is not

¹⁰⁶ Almada, M. (2025) *op. cit.* p. 111.

readily reversible by the action of the data subject and is determinative of access to a substantial interest, whether livelihood, income-generating opportunity, credit, employment, or public benefit. The *Ola/Uber* contrast operationalizes this directly: a single non-assigned ride is a transactional non-selection and does not meet the test, whereas an automated fine altering contractual rights is a positional sanction that does. The peak-hour ranking system of *Deliveroo* falls on the positional side because it does not merely allocate individual slots but recalibrates the standing of the courier within the allocation hierarchy of the platform across all future interactions. This distinction has broad application to two-sided marketplace platforms, including ride-hailing, food delivery, freelance labor markets, and dynamic pricing systems, and provides a workable doctrinal criterion for controllers and DPAs assessing the applicability of Article 22 in algorithmic brokerage contexts.

Within the perimeter so defined, the Article 22(2) exceptions do not dissolve the obligation. They are the conditions on which ADM is permitted, and Article 22(3) safeguards are the substantive price of that permission: human reviewers must be genuinely capable of deviating from algorithmic outputs, and meaningful information about automated logic must be provided in a form that enables actual contestation rather than merely formal acknowledgement. xAI methods are the technical infrastructure through which the latter obligation is dischargeable in complex machine-learning environments. Risk-based regulatory strategies, including data protection impact assessments, regular audits, and clarity around decision logic, complement this framework by bridging the gap between legal mandates and the operational complexity of modern machine-learning systems, and xAI must be accompanied by the institutional infrastructure that makes its outputs genuinely actionable for data subjects rather than formally adequate for controllers.

Constraining purely automated decision-making under Article 22 does not ban innovation. It reaffirms that the autonomy and dignity of an individual, which are central themes of the GDPR, must be upheld even amid the large-scale deployment of AI. The analysis of cumulative automated decisions in this study reveals how incremental steps, each seemingly trivial, can aggregate into serious risks to rights and freedoms. Recognizing these potential harms ensures that controllers cannot sidestep accountability by fragmenting decision-making processes into smaller parts.

Several limitations mark the boundaries of this analysis and point toward future research. The paper does not resolve whether Article 22 GDPR applies in parallel with the DSA to content moderation decisions that also involve

the profiling of personal data, an open doctrinal question whose resolution requires dedicated treatment. The coordination gaps between the DPIA framework of the GDPR and the FRIA of the AI Act, mapped by Rintamäki et al.¹⁰⁷, call for further empirical and normative work on how supervisory authorities should manage overlapping impact assessment obligations. More fundamentally, the individual-focused architecture of Article 22 inadequately addresses collective and group-level harms from systematic algorithmic disadvantage. Future legislative development may need to directly engage this dimension.

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¹⁰⁷ Rintamäki, T. et al. (2024) *op. cit.* pp. 25-26.

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