



# The Double Side of Artificial Intelligence in the Public Sector

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**Abstract.** The introduction of artificial intelligence in the public sector seems to be both a positive and negative development. On the one hand, artificial intelligence could improve the efficiency of public bodies due to the acceleration of the decision-making process, especially for repetitive procedures to free up public servants. Big data analysis, artificial intelligence, and the Internet of Things applied to the public sector could allow the reshaping of public service delivery. This is so, on the one hand, because data becomes a ‘piece of reality’ and, therefore, the aggregate analysis of data gives a realistic and objective picture of the current society. On the other hand, some concerns arise when artificial intelligence dissociates civil servants from the recipients of their services or affects the rights of these recipients. Scholars are called upon to reflect on the nature of artificial intelligence to overcome obstacles related to the ‘black box’ nature of its functioning and to better implement it in the public sector field. Legal rules and principles in the administrative decision-making process play a crucial role as they risk hindering the development of artificial intelligence in the public sector, as the Italian case-law highlights.

**Keywords:** artificial intelligence, public sector, evidence-based regulation, decision-making process

## 1. Introduction

This contribution aims to analyse the impact of artificial intelligence on the public sector due to the many benefits to the community and also its impact on individual rights and freedoms.

The introduction of artificial intelligence in the public sector seems to be both a positive and negative development. It is clear that artificial intelligence could improve the efficiency of public bodies due to the acceleration of the process of decision making, especially for standardized and repetitive decisions, freeing up

human resources. Furthermore, big data analysis, artificial intelligence, and the Internet of Things applied to the public sector could allow the reshaping of the delivery of public services. The blockchain, for example, could strengthen the transparency and traceability of decisions that involve several public agencies.

Generally, new technologies and the high amount of data represent an efficient tool to target problems more effectively and in a timelier manner by harnessing the data collected on different social groups. Thanks to the knowledge gained in the field of network science, reality could be explained as a space constituted of *interconnections* (links or vertices) and *nodes* (hubs), resulting in a repetitive and almost universal behavioural scheme.

The high degree of digitalization in the private and public sector, the computational power of computers, and the ubiquity of wirelessly interconnected devices – which can capture, store, and transfer data to computer servers – definitely change how reality can be represented: data becomes a ‘piece of reality’ and, therefore, the aggregate analysis of data provides a realistic and objective image of current society.

Consequently, digital tools provide the public administration with the knowledge necessary to act in a new way, strictly focused on achieving various public interests. It results in interconnectedness at different levels of government.

Nevertheless, some concerns arise when artificial intelligence substitutes civil servants and affects public service recipients’ rights. As in the private sector, where algorithms may decide if someone can receive a loan, the same could happen in the public sector (for example, to decide if someone could receive social benefits or subsidies). However, the private and public sectors are different in scope: the first one tries to maximize individual profits, while the second one must pursue public interest – without unreasonable discrimination. Furthermore, every national and European framework possesses some specific principles which public bodies should adhere to, such as *transparency* and *impartiality*, the obligation to provide reasoned decisions, the right to be heard or to participate, to resolve the requests of recipients (a right to due process and good administration). Related to these public priorities and principles, Article 22 of the General Data Protection Regulation (GDPR) – which came into force in all Member States of the European Union at the end of May 2018 – bans all decisions adopted in an automatic way that affect data subjects (with only three specific exceptions).

Consequently, in the administrative decision-making process, legal rules and principles seem to limit the use of artificial intelligence, as the Italian case-law highlights. Scholars must reflect on the nature of artificial intelligence to overcome obstacles related to the so-called ‘black box’ nature and to fit them better in the public sector field. For example, scholars should decide if artificial intelligence entities should be considered merely as tools or, indeed, as artificial civil servants. This preliminary choice is relevant to building a framework that could be observant of both the core principles of administrative decision making and the rule of law.

The positive effects of artificial intelligence are clear and extremely beneficial for improving innovation and competitiveness in the public sector. However, we cannot ignore its negative effects. For this reason, scholars and policymakers must reflect on a safe and respectful framework in which artificial intelligence could be legally used also in the public sector. In this process, lawyers especially should adopt an interdisciplinary approach that could allow them to better understand the fourth industrial revolution which we are experiencing, the formation of a digital society.

## **2. Data and Artificial Intelligence: How Does the Delivery of Public Services Change?**

In the public sector, the Italian process of innovation began many years ago, albeit slowly. In the 1990s, the first attempt of digitization of public documents and the promotion of digital tools were made. After several years of effort, concerns grew because of the difficulties associated with giving legal value to digital documents, and, consequently, the digitalization of public administration proceeded slowly.

The advent of digital revolution, coupled with the growth of computational power – two key features of the Fourth Industrial Revolution –, the interconnection of digital devices triggered the digitalization and automatization of the public sector. Not only did new tools for providing public services and for facilitating the relationship between public bodies and citizens become available but also a new idea of public bodies as makers of knowledge emerged, based on quickly collected administrative data.<sup>1</sup> This had the consequence of making data available to third parties as they are considered drivers of innovation and economic development.

The advantages of these transformations are evident. Nowadays, an increasing number of public services are accessible online through mobile applications and websites; the communication between public bodies and citizens is easier and more digital-based. Information about traffic, weather, and so on is displayed, for example, on real-time dashboards. Every day, the public sector could collect a large amount of personal and non-personal data, known as administrative data, as well as urban data on city infrastructures and utilities (i.e. traffic, public transports, etc.). All data are archived in different databases. Unfortunately, in the Italian

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1 Indeed, throughout the centuries, public bodies just collected data about cities and their citizens, but they were based on relatively limited samples, time- and space-specific, with the restricted number of variables. They have been defined as *small data*, which refer to data captured with questionnaire surveys, case studies, city audits, interviews, focus groups, national censuses, and government records. ‘Small data’ is characteristically limited and outdated because of inadequate tools for capturing and analysing it.

context, there's a so-called 'data silo approach' in effect, according to which each public body builds a specific database to satisfy its own needs. This approach is patently counterproductive in the era of artificial intelligence because of the way new technological tools function. Artificial intelligence needs to be trained with a big amount of data to offer some decision-making proposals and to highlight useful patterns.

In the light of this, the Italian Normative Code (d.lgs. 82/2005) and the efforts of the Digital Team and the Agency for Digital Italy are trying to transfer all administrative data to a public platform – called the Data & Analytics Framework (DAF) – where all local and national public bodies may access and use data for their decision-making processes.<sup>2</sup> This transition is meant to achieve the 'data lake' paradigm by implementing the idea that sharing data is now the most important challenge that all public bodies must deal with. To collect and to analyse a big amount of data is the first step to augmenting the ability of public bodies to gain knowledge and to inform the policy. The DAF platform tries to enhance and simplify the interoperability and the exchange of public data through public bodies to obtain more information as well as to standardize and to open data to third parties.<sup>3</sup> This approach makes the delivery of public services more efficient because it improves precision and rationality while reducing waste, based on a data-driven approach.<sup>4</sup> Until now, public bodies have always acted with an *ex-ante* programmed approach, but now the interconnection among big data, artificial intelligence, and the Internet of Things is predicted to allow public bodies to deliver public services efficiently for policy and governance purposes. Data-driven regulation based on the interconnection of data from different sources and the application of artificial intelligence, such as predictive algorithms, could propose to public bodies some solutions to achieve the most important goal of getting more for less. It represents an evident application of the potential of innovation that could move up the performance curve of public sector action.

Evidence-based methods build on trends and an *ex-ante* perspective. The information available at the time of regulation is paramount. As a result, evidence-based law-making processes are growing thanks to indicators, which capture real-time data and translate it on dashboard graphs, which provide detailed information about these indicators in a human-accessible form. For example, city performance

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2 For more information, see: <https://teamdigitale.governo.it/it/projects/daf.htm>. See also: Tresca 2018.

3 A new directive on the open data paradigm and the regime of public data is set to come into force: Directive (UE) 2019/1024 of the European Parliament and Council of 20 June 2019. This act will substitute the Public Sector Information Directive (UE) 2013/37 of the European Parliament and Council of 26 June 2013.

4 On the benefits of data-driven regulation, see: Di Porto–Rangone 2013; Borgogno–Colangelo 2019.

may be measured in this way. This revolution allows public bodies to capture ‘the desire to reform the public sector management of city services to make them more efficient, effective, transparent and value for money, combined with citizen and funder demands’.<sup>5</sup>

Data-driven regulation and artificial intelligence could enhance the efficiency and performance in fields specific to the public sector: the goal is to customize and personalize the action as well as to make more informed decisions and act on them<sup>6</sup> to cut some costs, to ‘do more with less’.<sup>7</sup> The impact of artificial intelligence can be visible also from the civil servants’ side: many repetitive tasks or easy ones could be completed by the technologies to free up servants and to re-address their activities to tasks requiring more use of human discretion: activities such as opening e-mails and attachments, filling in a form, scraping data from the web, or extracting structured data from documents could be done by bots in place of civil servants.<sup>8</sup> Moreover, artificial intelligence could be used in other different ways, particularly for simplifying the relationship between public bodies and citizens: for example, the Municipality of Turin applies a voice assistant for helping users to understand how public offices fit better with their needs: in particular, some microphones and loudspeakers will be installed in the more crowded offices to answer to questions posed by users and help them to address these to the correct office.<sup>9</sup> Similarly, a vocal assistant, named EMMA, is used in the USA for helping foreigners to receive the right answers about immigration issues and services as well as to find information on the website.<sup>10</sup> Another example is represented in the languages and data process support, such as in the field of education, in which the platform named PIERINO (Piattaforma per l’Estrazione e il Recupero di INformazioni Online – Platform for Extraction and Recovery of Online Information) has helped the Ministry of Education in

5 Kitchin–Lauriault–Mcardle 2015. 8.

6 Some examples arise from the education and health sector. In the education field, some public schools are using artificial intelligence in order to provide a more specific and customized learning experience, individualized for each student: the *ratio* is that the traditional school methods are ineffective. Similar applications are found in the health sector, where thanks to artificial intelligence doctors could analyse and individualize more quickly and more accurately some responses to specific diseases related to each patient.

7 For this approach, see: Maciejewsky 2017. 120–135.

8 For many other examples, see: *AI-Augmented Government: Using Cognitive Technologies to Re-design Public Sector Work* 2017. It is also important to underline that there are four approaches to the issue of substituting the human factor: the *relieve* approach aims to free up public workers from repetitive tasks; the *split-up* approach suggests a collaboration between workers and machines, in particular giving repetitive tasks to a machine and supervisory control to a human; the *replace* approach that (quite) totally substitutes humans in doing simple tasks or in giving easy responses; finally, the *augment and extend* approach is based on complementary activities between machines and workers.

9 The Municipality of Turin has just trained some of the speakers and loudspeakers with the most frequently asked questions and answers.

10 For more information, see: <https://www.uscis.gov/emma>.

the analysis of thousands of answers provided by citizens on the state of (and desire about) school.<sup>11</sup>

### 3. Artificial Intelligence in Decision-Making Processes: Some Critical Examples

The transformation of government in an artificial administration is shifting from the professional treatment model to a bureaucracy rationality<sup>12</sup> model. In the first approach, a human professional could govern and manage singular situations related to unique recipients through a fair procedure that considers legality as well as the individual's situation. The bureaucracy rationality model is based on a repetitive and depersonalized approach in which the data entered and data-matching are more relevant than recipients' situations. On the one hand, the advantages coming from a bureaucratized and automatized procedure are evident.<sup>13</sup> Some challenges are emerging, in stark contrast to some administrative principles and the rule of law.<sup>14</sup> For example, the Australian government used automatization to verify recipients' income to avoid overpayment of social benefits. This tool, known as the Online Compliance Intervention (OCI) program,<sup>15</sup> was proposed to make the welfare system more sustainable and, especially, 'to recover money from people that deliberately seek to defraud the social welfare system as well as those who have simply inadvertently been overpaid'.<sup>16</sup> Before this program, the government was used to checking some variations of recipients' income through a strict collaboration between officials of the Department of Human Services and the Australian Taxation Office. After the introduction of the automated approach, officials lost direct control over the input of recipients' income variations. The responsibility of inputting data regarding income was transferred directly to the recipients. The verification process and the enforcement action were automated without human oversight. Every discrepancy between the Australian Tax Office

11 See more detailed information at: <http://legacy.fbk.eu/it/news/fbk-collabora-con-il-miur-labuo-nascuola>.

12 Here I refer to a model of administration of justice in which governmental bodies as well as tribunals are included. For more information, see: Mashaw 1983.

13 Some of these are explained here in Chapter 2.

14 On the challenges to rule of law in the digital era, see: Wright 2014. For a weekly update about this issue, see the website: <https://binghamcentre.biicl.org/categories/digital-age>; for a more profound analysis on the impact of the digital era on many aspects of the rule of law, see: *The Rule of Law on the Internet and in the Wider Digital World. Issue paper published by the Council of Europe Commissioner for Human Rights*, available at: <https://rm.coe.int/16806da51c>.

15 For general information on the case, see: Daly 2019.

16 Senate Standing Committee on Community Affairs (Australia), Design, scope, cost-benefit analysis, contracts awarded, and implementation associated with the Better Management of the Social Welfare System initiative, 21 June 2017, at para. 1.3.

records and the data provided by recipients was considered as a proof of undeclared or underreported income. Consequently and automatically, the letter was sent to invite recipients to update or correct the data: if a recipient was not able to update data, refused to do so, or just considered that the request was not well-founded, the enforcement action was begun without considering any kind of challenges of recipients,<sup>17</sup> and the request for purported debt was sent.

This event became known as the ‘robodebt scandal’. Some politicians have paid attention to this, in particular because this kind of automation was characterized by ‘disruption and impact to individual’s lives’,<sup>18</sup> while the public confidence in this system was reduced. Debt calculation was not transparent and was unavailable to the public. The ‘robodebt scandal’ highlighted that a high rate of digitalization without sufficient support provided to the users could create unfortunate consequences. In this case, for example, recipients – who cannot work with a digital platform or do not have the possibility to express their reasoning because of mental health issues or other kinds of social or economic disadvantages or just for the belief in the rightness of authority – lost the possibility to defend own rights. The main consequence is the discrimination of poor people that are in disadvantages and unable to contrast with the algorithm decision and, consequently, succumb to it.

After a politician denounced these disadvantages, proposals were addressed to the OCI program to overcome the lack of procedural fairness. For example, the provision of an independent review of internal and external debt collection practices as well as external scrutiny on the process were introduced.<sup>19</sup>

Another application of artificial intelligence in the administrative decision-making process is the HART (Harm Assessment Risk Tool), the AI-based technology that could help policy bodies<sup>20</sup> in deciding about custodial decisions in the jurisdiction of the Durham Constabulary. The program is based on over one thousand personal histories of people previously arrested and processed in the last five years and is used for predicting if a suspect could re-offend during the next two years. The automatic forecast about the risk and the recidivism of a person could be more useful for a quick decision-making process, but how it operates has been criticized. The program works out the new decision based on previous decisions and by cross-referencing some variables, such as the neighbourhood of origin, the age, the gender, the income, and so on, that are considered as predicting parameters. The risk of discrimination is therefore high because of the sensitive variables that are analysed. This program categorizes people to better individualize

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17 E.g. difficulties in using the online portal or personal difficulties relating to family, job, or mental disease; more information is available in the above-cited report, in Chapter 4.

18 More information is available in the above-cited report, at para. 1.4.

19 More advice is available in the above-cited report, at para. 1.4.

20 For a broad analysis on artificial intelligence for criminal prevention, see: Bonfanti 2018, Babuta 2017, Scassa 2017.

the risk of a new crime. Even if it presents some advantages, practitioners should consider the necessity to update data and to insert correct data as well as seeing HART just as a tool, some sort of guidance and not as a decision maker.<sup>21</sup>

Similarly, in the American context, the Supreme Court of Wisconsin denied to a defendant named Eric Loomis a certain measure of freedom while under surveillance because of the Report released by the digital risk assessment tool called COMPAS<sup>22</sup> (Correctional Offender Management Profiling for Alternative Sanctions) which highlighted a high risk of danger and recidivism. As many commentators have underlined,<sup>23</sup> this decision seems to be discriminatory because it was based on a report generated on gender and race variables;<sup>24</sup> at the same time, the decision appears to be unfair because it is based on a proprietary software,<sup>25</sup> the functioning of which was consequently unknowable and unfit for external analysis.

Another critical application of artificial intelligence in the decision-making process is in university admission. One of the examples refers to the French context, where the portal Admission Post-Bac (APB) uses an algorithm for the selection and admission of students to the university and for creating a waiting list for available positions. The ranking in this waiting list is determined by use of the algorithm called Admission Post-Bac (APB), and it is based on the data available on students. In particular, each student is profiled<sup>26</sup> concerning the preferences expressed about universities, their school backgrounds, the postal code, and the family background.

If there are as many positions as students applying to them, there are no problems. Otherwise students are re-addressed to other, similar universities, without any possibilities to oppose the decision or to provide further data. Regarding this procedure, the *Commission nationale de l'informatique et des libertés* (CNIL – the National Commission of Information Technology and Liberties) determined some defects such as the absence of any information about the automatic collection of some personal data on family or grades at school.<sup>27</sup> Additionally, the Commission considered that the government has not provided sufficient information on the

21 For a proposal that considers the possibility to assess and to correct the algorithm's response, see: Oswald–Grace–Urwin–Barnes 2018. 244.

22 COMPAS is one algorithm used by the American police in order to individualize where crimes could be committed and prevent them as well as to provide personal information on suspects.

23 Supreme Court of Wisconsin, *State of Wisconsin v Eric L. Loomis*, Case No 2015AP157-CR, 5 April–13 July 2016; according to Carrer 2019; Simoncini–Suweis 2019. 93.

24 In 2016, a journalistic investigation demonstrated the racial biases in the software; see at: <https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm>.

25 On the contrary, the Italian jurisprudence supports the accessibility to the software; see: TAR Lazio, sez. III-bis, sent. No 3769/2017; see also Pinotti 2019. 118–125.

26 The elements that could be analysed are individualized in the French *Code de l'Éducation*.

27 The French legal framework, according to the GDPR regulation, obliges public bodies to inform on automatized processes such as collection or managing personal data.



rejection of the request as well as the logic underpinning the decision, the weight assigned to any variables, or the rate of mistakes.

Consequently, the CNIL obliged the government to cease the use of this portal. Nevertheless, a new platform, called *Parcoursup*, has just replaced the old one. It fits the current legal framework<sup>28</sup> better, especially because it allows students to present some exceptional circumstances or an opportunity for discussion with the university, which has refused the student. Moreover, if there are no positions in the selected university, the platform addresses a proposal to the student to apply to another university, similar to the preselected one. The student has the opportunity to accept or to refuse<sup>29</sup> this proposal. Finally, the new platform respects the guarantees expressed in the GDPR framework.

Since 2016, the Italian Administrative Court handed down decisions on how artificial intelligence should be used in administrative procedures to respect the whole normative framework. The entry of artificial intelligence in the administrative procedure<sup>30</sup> could present some difficulties because of the European legal framework, which bans an automated decision-making process when rights and freedoms could be affected under Article 22 of the General Data Protection Regulation (GDPR). Some concerns arise also because of the ‘black box’ mechanism of artificial intelligence functioning (especially in machine learning or deep learning applications), which creates some collisions with administrative principles such as transparency, accountability, or motivation. In the following, we focus on some key decisions to highlight how Italian judges try to tackle digital revolution by making use of the principles of administrative law.

With regards to one of these decisions, number 9227 of 2018, the administrative judge stated the instrumental role of artificial intelligence, subordinated to the autonomous judgment of civil servants. In particular, the subjects to automated administrative acts complained about the absence of human intervention in the administrative procedure, with the consequence of the mere transposition of artificial intelligence output by the procedure. Consequently, the core principles of administrative law, such as the main role of the civil servant, the right to participate provided to the recipient and the right to oppose the decision as well as the obligation to provide reasoning for the administrative decision, seem not to have been respected. The administrative court declared that the high number of participants in a public competition for occupying a job (in this case, the competition referred to candidates to the status of public teacher) is not sufficient to justify the complete automation of the procedure. It is affirmed that some legal

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28 See : *Commission nationale de l'informatique et des libertés*, Deliberation n. 119/2018, available at: [www.legifrance.gouv.fr](http://www.legifrance.gouv.fr).

29 For an interesting analysis of this case study, see: Avanzini 2019. 126–135.

30 On the relationship between artificial intelligence and administrative procedure, see: Galetta–Corvalan 2019, Cavallaro–Smorto 2019, Viola 2018, Alberti 2019. 141–155; previously, Masucci 2011, Fantigrossi 1993.

arrangements, such as participation, transparency, and access to the administrative acts, could not be limited by the use of artificial intelligence systems.<sup>31</sup>

The administrative judge also affirmed that the evaluative, cognitive, and intellectual approach of human activities must not be replaced by the artificial intelligence system and, consequently, that such systems must be considered just as instruments for the administrative procedure. These instruments seem to be useful for analysing a high number of candidates or for doing some repetitive tasks. Nevertheless, these artificial intelligence instruments could not substitute the ‘cognitive, intellectual and judgment activities that just a preliminary analysis made by a civil servant could do’.<sup>32</sup>

Additionally, the Court considered that the unsupervised use of artificial intelligence is in contradiction with the Italian administrative legal framework because it has to be considered as involving an administrative activity. In particular, articles 7, 8, 9, 10 and 10bis of the main act of administrative procedure (Act No 241, issued on 7 August 1990) represent the substance of the relationship between the public administration and recipients, based on participation rights. Article 3 of the previously mentioned Act refers to the right to reasoning for administrative acts, which could not be eliminated to preserve the right of defence of recipients as well as the power of the judge to know the logical procedure underpinning the decision adopted. This latter aspect is strictly connected to the notion of external full judicial review because knowing the steps adopted by civil servants makes it easier for the judge to determine the logic and reasonableness of an administrative decision.

Other decisions by the administrative regional courts (TAR Puglia, sez. I, no. 806 of 27 June 2016 and, more recently, TAR Lazio, sez. III, no. 8076 of 18 July 2018) recognize – even if with a different logical procedure – that ‘[a] digitised procedure applied to the administrative procedure must be put into a servant approach and, consequently, it is forbidden that technical biases obstruct the relationship between public administration and citizens’.<sup>33</sup> Moreover, in the same vein, the Council of State in Sentence No 5136 of November 2017 affirmed that any administrative rejection is legal if it is the consequence of a technical failure. In this specific case, a citizen submitted an online request, but his application was refused because the time limit had been exceeded due to a technical failure. Consequently, the Supreme Court revoked the rejection and attributed the responsibility for the delay to the service operator.

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31 On the relationship between public law and ethics of algorithms, see: Casonato 2019. 101–130, Crisci 2018, Simoncini–Suweis 2019.

32 This idea is repeated in various sentences of administrative courts such as the Administrative Regional Court of Lazio, nos. 9225, 9226, 9227, and 9230 of 2018.

33 TAR Lazio, sez. III-bis, sent. no. 8312/2016, available at: <https://www.giustizia-amministrativa.it/>. Translation by the author.

Additionally, other decisions<sup>34</sup> consider that every *de facto* exclusion from a public competition because of a technical failure is illegal. Judges recognize that the algorithmic decision is qualified as a substantial administrative activity, and, consequently, it has to respect the principles of administrative procedure.

In each of the previous decisions, it is clear that judges want to protect citizens from decision-making algorithmic administrative procedures that could be illegal because of their contrast with the core principles of public administration such as transparency, accountability, impartiality, and legality of the action.<sup>35</sup>

Admittedly, the algorithmic decision-making process is rather difficult to unbundle, particularly when it comes to deep learning and machine learning mechanisms based on self-learning methods. These highly advanced technologies use big data extensively and, after an initial programming phase, their reasoning could not be known even to the coder.

## 4. Conclusions

Finally, it is possible to affirm that the introduction of artificial intelligence in the public sector presents a positive and a (quite) negative side at the same time. The development of artificial intelligence could improve the efficiency of public bodies: advanced technologies seem to better address and allocate resources as well as personalized services. Artificial intelligence and big data analysis represent a new way of running public management. The opportunities arising from the big data paradigm allow public bodies to analyse and capture deeply what happens in the local system: thanks to the Internet of Things, devices as well as predictive governmental analyses may provide better public services.

In particular, a new management paradigm arises: these advanced technology tools allow public administration to identify indicators and to quickly collect insights as well as to integrate, unify, and analyse data from different sources. This digital revolution makes it possible to shift ‘from fact-free policy to rational and evidence-based rules’,<sup>36</sup> where ‘a proactive mode of operation based on mathematical models’<sup>37</sup> dominates.

Even if technologies are neither good nor bad, probably it is their use that could create some concerns. Each algorithm implies some policy choices as well as subjective judgements about what data to use, how to weigh the variables and data. Although algorithms are based on mathematical and statistical methods, it would

34 TAR Lazio, sez. III-bis, sent. no. 2272/2018; TAR Lazio, sez. III-bis, sent. n. 11786/2016, available at: <https://www.giustizia-amministrativa.it/>.

35 Similar interpretation is supported also by the *Commission nationale de l’informatique et des libertés*, Deliberation no. 119/2018, available at: [www.legifrance.gouv.fr](http://www.legifrance.gouv.fr).

36 Ranchordas–Klop 2018. 12.

37 Appel et al. 2014. 172.

be misleading to think that they are completely objective. Programmers intervene deeply on the choice and the weight of data as well as on the procedural process. On top of this, the decision-making power of big tech firms, which benefit from more competence and skill than the public sector does, is growing in managing public interests.

The problem related to the programming and designing of algorithms<sup>38</sup> is that they ‘can privilege different stakeholders in a decision’<sup>39</sup> with a high risk of discrimination. Probably this is the main concern that scholars have to deal with to preserve public interest: public bodies should collaborate with private vendors to help determine if decisions could have an unfair impact on individuals. The algorithms could make mistakes in the decision-making process because of incorrect or out-of-date inputs, but, at the same time, the usefulness of this decision-making process is evident. Consequently, a balancing act between the efficiency and the fairness of artificial intelligence in the public sector is necessary.

Because of the necessity to assess and correct an algorithm quickly and without obstacles, two solutions may be proposed.

On the one hand, the procurement’s call for tender must have considered some provisions where civil servants and programmers should work and program together to guarantee that the algorithm pursues the public goal individualized and, at the same time, to allow public bodies to assess and control how the algorithm works.

The idea is to create a strict collaboration between public bodies and engineers through guidelines on the legal framework and technological measures for compliance, to be adhered to by programmers. The main goal is to reach a solution which is ‘legal by design’ and which allows for the preservation of administrative principles in the designing phase.

On the other hand, the review of mistaken algorithmic decisions should take place in the administrative procedure and not during judicial review. The proposal is that public bodies could adopt some act *ad hoc* to review and quickly change the wrong content of artificial acts before the judicial review takes place. This proposal intends to guarantee the rights and freedoms of recipients straightforwardly as well as to respect the European legal framework related to the ban of solely automated decision making. Artificial intelligence, big data analysis, and other advanced technologies should be fostered in the public sector to deliver more efficiency and effectiveness. This is possible thanks to a predictive approach, for re-thinking the managing of services for the community, for reaching the ‘smart-city model’.

Conversely, the use of artificial intelligence or other technologies in the decision-making process should be carefully handled as it impacts individual rights. Previous case studies, analysed above, demonstrate that algorithms are

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38 On the transparency of algorithm, see: Brauneis–Goodman 2018.

39 Diakopoulos 2015. 400.

value-laden, even if they are programmed with a statistical method. Some biases might have been caused by the ‘tuning’ of the algorithms designed by a private programmer as well as the entering of uncorrected data. Digital revolution forces the reflection on private–public partnership because of the increasing necessity to constantly assess, check, and eventually correct the algorithm used.

At the same time, the judicial review of mistaken algorithmic decisions seems to appear too cumbersome and ineffective. Thus, restoration of potential harm should be anticipated in an administrative procedure where the act could still be corrected.

Furthermore, the role of human intervention should not be underestimated even in the automated decision-making process not only because of the GDPR but, above all, because of the idea that the implementation of administrative law principles should not be utterly replaced by machines.

Nevertheless, instead of adopting artificial intelligence, it is preferable to adopt a ‘human-in-the-loop’ approach according to the idea that humans should oversee the automated process and, if it is necessary, should intervene and control it. Ultimately, the automated decision-making process should be admitted, with the proper guarantees, if there is a right to have a human decision.

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