A snapshot of AI-solutions in the public sector

Giulia Maragno, Luca Tangi, Luca Gastaldi, Michele Benedetti[1]

[1] Politecnico di Milano, Department of Management, Economics and Industrial Engineering (DIG), Via Raffaele Lambruschini 4, Milan (Italy)

Abstract. The implementation of Artificial Intelligence (AI) in public settings is not a new topic. However, only recently it gained momentum, and practitioners started investigating the potentialities of this technology also within the public boundaries. On the opposite scholars rarely focus on AI, leaving an urgent gap to fill. Moreover the current body of literature is muddleheaded and scholars fatigue in disentangling and clarifying the various domains and fields of analysis. This paper aims at providing an overview of the state-of-the-art of AI applications, in order to explore the trends and identify promising paths for future research. For doing that it relies on an original and up-to-date study of existing AI projects worldwide.

Keywords: Artificial Intelligence; Public Organization; e-government

1 Introduction

Public sector plays a pivotal role in AI development both considering legislation advancement [1]–[3] and application development [2]. However, despite the growing hype around the topic, studies on AI in public settings are still limited [4]. Based on these premises, the aim of this paper is to depict the state-of-the-art of AI applications within the public sector in order i) to explore the degree of AI adoption and ii) to highlight the features of AI applications, setting the ground for future studies on the topic. Scholars and practitioners are aware that the usage of AI has the potential to disrupt almost all industries [5], among which the public sector and the way public organizations manage and deliver their services [6]. However, scholars rarely focus on AI, leaving an urgent gap to fill [7] and setting the boundaries of AI research is becoming an extremely difficult exercise. To the best of our knowledge, the only attempt to make order in this field has been made by the European Commission with a research that lists all possible AI applications in the continent [2]. However, this research has room for improvement: this study aims at overcoming those limitations offering an up-to-date (December 2020) view of the diffusion of AI initiatives in the public sector, with a worldwide breath. Moreover, the proposed taxonomy offers several suggestions for scholars on how to analyze AI applications in the public sector.

2 Methods

As primary source for the census, we considered news articles from sector-specialized journals. To gather these information, we tracked the news adopting an automated system of keyword alerts and we daily monitored the articles that mentioned one of the settled keywords. Only the articles related to the public sector have been selected. Once the project was identified as eligible for the census the first two authors started analyzing it to extract the main data related to AI application. The final goal was to fill the database (an Excel file) with all the information reported in the figure below: we developed a taxonomy based on dimensions considered relevant by both academics and practitioners. The taxonomy was itself one of the results of this study. The output of this analysis is a sample of 215 initiatives, selected from January 2018 to December 2020.

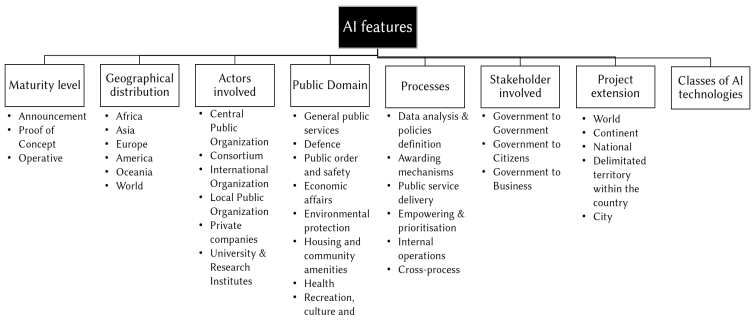

Fig. 1. The analytical framework adopted to investigate AI applications

3 Results

215 AI projects were identified. Data shows that the implementation of AI solutions in the public sector has grown over the last three years: from 45 in 2018 to 123 in 2020. Moreover, considering their level of maturity the majority of the cases are in a pilot testing phase (81 projects; 38%). Considering the geographical distribution of the AI initiatives, the highest number of projects was found in America (113; 53%), followed by Europe (64; 30%) and Asia (30; 14%). The remaining 8 projects (3%) are spread among Oceania and Africa. To identify the actors involved in the implementation of AI within the public sector, the analysis focus-es on the main actor engaged in each project: Central Public Organizations are the institutions which show the highest rate of AI projects (98 cases; 46%), followed by Local Public Organizations (61 cases; 28%). As regards the classes of AI solutions implemented, data highlights that AI projects are mainly based on Computer Vision solutions (62 projects; 29%), hence projects that support actors to extract information and elaborate patterns from imag-es. The highest explored application area is the health sector, with 67 cases (31%): this is not surprising as, due to the breakout of the COVID-19 pandemic, the request of AI solutions in this domain has increased. Considering instead the process distribution, the majority of the AI projects are implemented to support public decision makers in the empowering of existing processes and in the prioritization of activities (66 cases; 31%). Data confirm the impressive trend in the development of AI applications in the public sector, highlighting how public organizations are going fast, or even rushing in the usage of AI. Thus, scholars are called to follow this trend also in academic research.

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