Chapter 7
Review on the Application of Artificial Intelligence-Based Chatbots in Public Administration

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ABSTRACT

Customer service continues to grow exponentially and is becoming more important every day, mainly because many companies, public and private organizations, are increasing the number of services they offer and the number of people who use them is also increasing. Given the above, business-to-customer service is an important strategy to ensure customer satisfaction. Artificial intelligence allows us to develop different tools, such as chatbots that can simulate human conversations providing customer service immediately. Unfortunately, according to the present research, the authors have realized that the architectures of existing chatbots, mainly those used in the public sector, are not fully efficient because they lack the use of artificial intelligence techniques and basically only consist of menus that provide information based on the selected option. Therefore, this chapter presents some improvements for the development and implementation of chatbots in public administration.

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1. INTRODUCTION

Artificial intelligence (AI) is an area of computer science that has great impact on our daily lives, becoming more noticeable in areas of knowledge such as economics, marketing, finance, and other important areas. It is expected that AI will transform our society in the coming years, driving us to economic growth and social development (Villagrasa, 2020). AI in public administration has become real for assistance in decision-making processes and the provision of public services. The various uses of AI by the public administration can be of great contribution (Martinez, 2021).

In recent years, companies and governments have debated whether to use new technologies, including artificial intelligence, or not to do so due to the fear that AI in government will become very technocratic, endangering democracy, and even threatening democracy. Furthermore, the inexplicability of how AI-based technologies are developed and how they operate represent a pitfall towards comprehension, impartiality, benefits, and confidence regarding the potential results of implementing these kinds of emerging technologies. All these have been one of the main limitations by which the exploration and implementation of new technologies have been affected (Neumann, Guirguis, & Steiner, 2022).

The advances and benefits that the use of artificial intelligence techniques have had are very promising and there are more and more programs and applications that, based on it, offer more efficient solutions to perform any type of task. The public administration has implemented in its processes the use of AI techniques with the aim of contributing to the consolidation of an intelligent administration, which is personalized, more efficient, and digital to provide more and better services to citizens (Valle-Cruz, Criado, Sandoval-Almazán, & Ruvalcaba-Gomez, 2020).

Thanks to the availability and use of large data sets, governments have the potential to exploit Big Data and could generate important technologies that allow achieving new objectives such as making better decisions, forecasting events, improving communication between the government and citizens (mainly making use of virtual assistants generated based on artificial intelligence techniques), generate personalized public services and with all this reduce the administrative burden and achieve multiple benefits (Neumann, Guirguis, & Steiner, 2022).

In this regard, some examples of AI implementation in the public administration are algorithms to predict risks of building and forest fires, to detect false reports, predictive policing, advise for legal trials, as well as chatbots to improve government-citizen interaction (Berryhill, Kok-Heang, Clogher, & McBride, 2020). Due to the ability to process natural language or analyze large amounts of data, artificial intelligence tools have the potential to contribute to improving the provision of public services and for assistance in public decision-making (Pastor, 2019).

There are multiple areas where it has been identified that the use and implementation of AI would generate great benefits, for example: process automation, fraud and threat detection, knowledge management, conversational agents and assistants, predictive analysis, assignment of resources, etc. The use of AI in the public sector continues to increase, generating great benefits, but to regulate these technologies and ensure that their use is appropriate, policies on the use of AI have been implemented (Neumann, Guirguis, & Steiner, 2022).

Particularly, the potential of natural language processing and machine learning algorithms provide technological tools that boost government to citizen interaction using virtual assistants which use automated response systems to questions asked in natural language, or dialogue systems based on voice recognition to provide customer service, advice, and information to citizens. This is to provide a more efficient service by improving response times and access to the service. For example, the U.S. Citizen-