Chapter 6
Application of Machine Learning Techniques for Predicting Citizen Usage of Electronic Government Services

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ABSTRACT

This study examines Mexican citizens' use of e-government services through advanced machine learning models. Based on data collected from the ENDUTIH 2022 and focusing on a sample representing 30% of

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the total, sociodemographic variables such as sex, social strata, age, and socioeconomic level were investigated, along with technological skills and internet access patterns. The algorithms applied include K Nearest Neighbor, Support Vector Machine, Random Forest, and XGboost, with Random Forest and XGboost standing out for their precision and sensitivity. The results show that the factors studied are significant predictors of user behavior in the context of e-government, suggesting that the government can improve strategies for implementing government digital services based on these findings. However, the study acknowledges limitations, such as its focus on data from Mexican users, and recommends further research to expand the range of variables and contexts analyzed.

INTRODUCTION

The digital transformations of the 21st century have accelerated profound changes in information technologies, resulting in unprecedented interconnectivity and ubiquity of the web. In this environment, individuals' daily interactions with computers, smartphones, platforms, mobile applications, and Internet of Things (IoT) technologies have fundamentally reshaped communication between citizens and the government. This evolution has given rise to the emerging paradigm of e-government, defined as a dynamic system of information, communication, and interaction between the government and citizens.

In response to these developments, e-government has been catapulted to a priority place in public administration agendas, as reflected by the reports of the United Nations (UN, 2016). This prioritization underscores the imperative governmental need to offer services that improve communication and interaction with citizens and enhance the efficiency of these services.

In developing countries like Mexico, these needs are intensified due to specific sociodemographic conditions and persistent inequalities. These circumstances invite inquiry into which sociodemographic and technological factors affect how citizens use e-government services.