

Chapter 9

Perceptions of Civil Engineers on the Development and Adoption of AI in the Peruvian Public Sector

Oscar G. Miranda-Hospinal

Universidad Nacional de Ingeniería, Peru

David Valle-Cruz

Universidad Autónoma del Estado de México, Mexico

Jorgue L. Yrivarren-Lazo

Universidad Nacional de Ingeniería, Peru

ABSTRACT

Artificial intelligence is an emerging technology that has begun to be adopted in different organizations throughout the world, and public works cannot be left behind. The chapter discusses the measurement of perceptions of transparency and efficiency through a global approach to exploratory questions related to the advances and acceptance of artificial intelligence (AI). The objective is to explore the potential of AI to monitor transparency and efficiency in Peruvian public works executing units. Through a survey addressed to civil engineers related to public works and its potential link to AI, this chapter also explores technological frameworks related to AI. They show a high acceptance of AI in the execution stage of the work. In the matter of capacities and behaviors, they accept the substitution of the construction monitor (coordinator), the supervisor, and the resident (in that order) by the AI. The document ends with some lessons and recommendations for researchers and professionals interested in the area of study.

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INTRODUCTION

Latin America is a region with serious corruption problems. According to the ranking carried out by Transparency International, Peru is among the least transparent countries and classified among the countries with high corruption, being above Bolivia, Mexico, and below Colombia and far below Chile (Transparency International, 2021).

To solve these endemic problems in our society and governments, technological mechanisms can be implemented to monitor, control, and manage processes more efficiently and transparently (Transparency International, 2021).

Artificial intelligence in the public and private sectors is already a reality in Peru. Few contractors have explored automation processes, directed towards the implementation of artificial intelligence for application purposes in bidding, logistics, project management, subcontracts, construction supervision, and in arbitration processes. However, in the public administration, its implementation will be more difficult, due to uses and customs and the low capacity to share databases of the Peruvian public entities.

In this case, different public organizations began implementing this technology in areas such as predictive analytics, operations, service management, and risk management. The study: Potential impact of the use of artificial intelligence in public employment in Latin America, from the Development Bank of Latin America (CAF), considers some of the main benefits of using AI in government since AI allows the processing of large amounts of data in a short time, optimization of work, since AI frees up time workers assigned to repetitive tasks, and with this, it contributes to improve quality, reduce costs and speed up processes; and the expansion of value, or the possibility of doing things differently, with the help of AI. CAF: Potential impact of the use of AI in public employment (2022, mayo 3).

The application of artificial intelligence (AI) in public works, especially in the contract award stage, is a relatively new topic for which socio-cognitive and institutional approaches to Information Technology (IT) in (public) organizations are intended to be used. The authors of these approaches consider that the assumptions, expectations, and technological knowledge or frameworks of those responsible for public works, such as residents, supervisors, and even infrastructure directors, who are involved in designing AI strategies, are orienting their future towards emerging systems in the public sector. Regarding this idea, this study explore the technological frameworks of residents, supervisors, and infrastructure directors of the head units executing works in Peru.

The study's objective is to measure the potential of AI in public works, especially in perception and efficiency, based on a survey adapted from Criado et al. (2020) and Criado and Zarate-Alcarazo (2022) adapted for the study of civil engineers' technological frameworks. Questions are related to the following areas: (1) Perceptions about the concept of AI in public works, (2) Expectations about AI in public works, and finally (3) Challenges and opportunities of AI in public works (Appendix includes the instrument applied to civil engineers).

The expectations about AI in public works it was disaggregated by questioning in which areas of public works AI would be adopted, in the preparation of the construction budget, job safety, training of work personnel, mobility and transport of materials, citizen participation or social license, environmental protection, etc. The question also arose about the most affected functions by AI in the short term, broken down into administrative tasks, executive management, technical tasks, training, warehouse management, regulations, financial operations, and construction operations.

Finally, participants were asked about the challenges and opportunities of AI in public works, for which they were disaggregated by asking what would be the main inhibitors for the implementation

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