

TC Document

I. Basic Information for TC

▪ Country/Region:	REGIONAL
▪ TC Name:	Maximizing the development effectiveness of generative AI in the public sector
▪ TC Number:	RG-T4602
▪ Team Leader/Members:	Roseth, Benjamin David (IFD/ICS) Team Leader; Munte Kunigami, Arturo (IFD/ICS) Alternate Team Leader; Rossetti Youlton Magdalena Alejandra (IFD/ICS); Centeno Lappas, Monica Clara Angelica (LEG/SGO); Vieyra, Juan Cruz (IFD/ICS); Santamaria Bonilla, Julieth Andrea (CSC/CSC); Marmolejo Ocampo, Lina Maria (IFD/ICS); Gonzalez Chacon Marianna Jose (IFD/ICS); Garcia Mejia, Mauricio (IFD/ICS); Porrua Vigon, Miguel Angel (IFD/ICS); Angel Canarete Hugo Alberto (ITE/IPS)
▪ Taxonomy:	Research and Dissemination
▪ Operation Supported by the TC:	.
▪ Date of TC Abstract authorization:	27 Aug 2024.
▪ Beneficiary:	Argentina, Chile, Jamaica and Peru
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ Donors providing funding:	OC SDP Window 2 - Economic Growth(W2F); OC SDP Window 2 - Institutions(W2C)
▪ IDB Funding Requested:	OC SDP Window 2 - Institutions (W2C): US\$92,500.00 OC SDP Window 2 - Economic Growth (W2F): US\$92,500.00 Total: US\$185,000.00
▪ Local counterpart funding, if any:	US\$0
▪ Disbursement period (which includes Execution period):	36 months for execution and disbursement
▪ Required start date:	December 1, 2024
▪ Types of consultants:	Firms and individuals
▪ Prepared by Unit:	IFD/ICS-Innovation in Citizen Services Division
▪ Unit of Disbursement Responsibility:	IFD/ICS-Innovation in Citizen Services Division
▪ TC included in Country Strategy (y/n):	no
▪ TC included in CPD (y/n):	no
▪ Alignment to the Transforming for Scale and Impact Institutional Strategy 2024-2030:	Institutional capacity and rule of law

II. Objectives and Justification of the TC

- 2.1 The objective of this TC is to improve the development impact of Generative Artificial Intelligence (GAI) in the public sector through the generation of knowledge about the impact of GAI on public sector decision-making and how best to encourage its responsible use. It will achieve this objective through a series of experiments with public servants that will measure the impact of the use of GAI on outcomes such as productivity, technical quality, bias, noise, and effort, and the conditions under which these outcomes are optimized. This knowledge will inform the execution of current and

future IDB operations¹ that finance digital skills training for public servants and government policies on the applications of emerging technologies.

- 2.2 **Motivation.** Governments are under pressure to improve efficiency and effectiveness. Artificial intelligence-based tools, particularly generative AI (GAI), can accelerate routine tasks, and also search and synthesize information at a speed unattainable by humans, thus serving as an aide for complex tasks², boosting productivity³ and work product quality⁴. Similarly, using algorithms in decision-making processes has been shown reduce unexplained variation in decisions (“noise”) between cases – potentially increasing fairness⁵. For these reasons, among others, governments, and individual public officers, around the world are increasingly adopting AI⁶ – though often without an overarching strategy⁷. As GAI gains traction, there are growing concerns about its weaknesses. First, errors: all major GAIs have suffered from the generation of false information that masquerades as truth⁸, which can increase the overall error rate in work products⁹. Second, biases: GAIs have been shown to have biases against different population groups¹⁰. And third, over-reliance on GAI can generate a perverse effect on the effort devoted to tasks, manifesting as laziness or lack of attention to detail¹¹. These weaknesses can translate into problems for governments: incorrect information, increased bias, or a reduced level of effort, all of which reduce the quality of public policy formulation and execution.
- 2.3 **Literature.** There is no existing literature that assesses the effect of GAI on the behavior of public officials¹², or the conditions under which its benefits are maximized and its risks minimized. There is, however, literature that guides the formulation of this project, including research that shows that (i) public officials are susceptible to

¹ The current regional portfolio in which this knowledge would be readily applicable includes [5895/OC-UR](#), [5834/OC-PE](#), [5501/OC-PN](#), [5758/OC-CH](#), [5841/OC-TT](#), and [5758/OC-CH](#).

² [Brynjolfsson, Li and Rayment](#) (2023) found that introducing a GAI tool to customer service agents increased their productivity by 14%. Brynjolfsson, E., Li, D., & Raymond, L. R. (2023). *Generative AI at work* (No. w31161). National Bureau of Economic Research.

³ [Brynjolfsson, Li and Rayment](#) (2023); [Dell'Acqua et al](#) (2023). Navigating the jagged technological frontier: Field experimental evidence of the effects of AI on knowledge worker productivity and quality. *Harvard Business School Technology & Operations Mgt. Unit Working Paper*, (24-013). [Peng et al](#) (2023). The impact of ai on developer productivity: Evidence from github copilot. *arXiv preprint arXiv:2302.06590*.

⁴ [Nie et al](#) (2024) found that students with access to a GPT interface fared significantly better on a coding exam than those without.. Nie, et al (2024). *The GPT Surprise: Offering Large Language Model Chat in a Massive Coding Class Reduced Engagement but Increased Adopters' Exam Performances* (No. qy8zd). Center for Open Science.

⁵ Kahneman, D., Sibony, O. and Sunstein, C.R., 2021. *Noise: A flaw in human judgment*. Hachette UK.

⁶ In the UK, a survey of a sample of public officials from health, education, social work, and emergency services found that 22% of respondents actively use GAI at work. Source: Bright et al, 2024. <https://arxiv.org/html/2401.01291v1>. In the private sector, the use of such tools appears to be higher: a survey of 11,000 professionals at large firms revealed that 43% of respondents had used chatGPT or similar tools at work – and that 70% of them did so without their boss' knowledge. <https://www.fishbowlapp.com/insights/70-percent-of-workers-using-chatgpt-at-work-are-not-telling-their-boss/>

⁷ Source: World Bank. Artificial Intelligence in the Public Sector: Summary note. <https://documents1.worldbank.org/curated/en/746721616045333426/pdf/Artificial-Intelligence-in-the-Public-Sector-Summary-Note.pdf>

⁸ Patel, H., 2024. Bane and boon of hallucinations in context of generative AI. *Authorea Preprints*.

⁹ [Dell'Acqua et al](#) (2023)

¹⁰ Zhou, M., Abhishek, V., Dardenger, T., Kim, J. and Srinivasan, K., 2024. [Bias in generative ai](#). *arXiv preprint*.

¹¹ [Hill, B.](#) (2023). Taking the help or going alone: ChatGPT and class assignments. *HEC Paris Research Paper Forthcoming*.

¹² [De Sousa, W. G., de Melo, E. R. P., Bermejo, P. H. D. S., Farias, R. A. S., & Gomes, A. O.](#) (2019)

modifying policy decisions when presented with external information, thus highlighting the need for guidelines and/or trainings on the responsible use of GAI by public officers to help them understand the potential applications, risks, and limitations this class of tools¹³; (ii) GAI can have with potentially greater benefits for those with higher baseline skill levels¹⁴ and greater utility for simpler tasks¹⁵; (iii) use of GAI can induce higher error rates on cognitive tasks¹⁶; (iv) GAI can increase creativity but reduce the diversity of novel content¹⁷; and (v) Employees are concerned about irresponsible use of AI: a 2023 survey to public officials in 18 countries 86% of respondents stated that they will need training to adapt to the impact of AI in the workplace¹⁸.

- 2.4 **Anecdotal episodes.** There are several notable anecdotes that illustrative the promises and pitfalls of GAI in public sector work. On the positive side: (i) In [Porto Alegre, Brazil](#) (2024), the city council unanimously approved a law drafted entirely by ChatGPT that exempted citizens from the replacement cost of water meters that had been stolen. The lead drafter of the law later announced that ChatGPT was used; and (ii) In [Colombia](#) (2023), a judge issued a decision to exempted the parents of an autistic child from payments for therapies for the child, based on the (correct) observation of ChatGPT that, according to Colombian law, payment for such therapies was not required. On the negative side: (i) In [Peru](#) (2024), a congressman was criticized for presenting multiple draft laws that were copied directly from ChatGPT, including the phrase “As an AI language model, I do not have access to real-time information”; and (ii) in [Brazil](#) (2023), a judge was investigated for citing inexistent jurisprudence suggested by ChatGPT in a decision.
- 2.5 **Research questions.** 1. To what extent do public servants adopt GAI-generated suggestions? 2. What is the impact of the use of GAI by public servants on outcomes such as productivity, technical quality, bias, noise, and effort? 3. To what extent do different treatments, such as ex-ante training on responsible GAI use, occasional nudges on how best to use GAI, and the threat of disciplinary action in the event of irresponsible use, affect the aforementioned outcomes? 4. How do outcomes vary across individual characteristics (e.g. gender, age, education level)?
- 2.6 **Theory of change.** GAI presents numerous potential benefits for public sector work (e.g. increased productivity, greater access to information, reduced bias and noise) but also risks (e.g. use of incorrect information, introduction of bias, overdependence). This study will (i) set a baseline of the impact of GAI on the aforementioned outcomes; and (ii) test different treatments (e.g. training, nudges, threat of disciplinary action). In so doing, it will both identify the impact of GAI in the absence of any intervention and also assess the relative effectiveness of different types of treatments. This information can be used by policymakers in the region to design relevant interventions, including policies and training programs, thus allowing governments to appropriately harness

¹³ Hjort, J., Moreira, D., Rao, G. and Santini, J.F., 2021. [How research affects policy](#): Experimental evidence from 2,150 Brazilian municipalities. *American Economic Review*, 111(5), pp.1442-1480.

¹⁴ [Roldan-Mones](#) (2024). [Otis et al](#) (2024) found something similar in a business context: AI-generated advice produced significantly better results for already high performers, and significantly worse results for low performers.

¹⁵ [Choi and Schwartz](#) (2024). AI Assistance in Legal Analysis: an empirical study. *Journal of Legal Education*.

¹⁶ [Dell'Acqua et al](#) (2023)

¹⁷ [Doshi and Hauser](#) (2023). Generative artificial intelligence enhances creativity. *Available at SSRN*.

¹⁸ Boston Consulting Group (BCG), 2024. [Generative AI for the public sector](#): The Journey to Scale.

the power of GAI while mitigating its risks. The above-referenced IDB projects are ready vehicles for introducing such policies and training programs.

- 2.7 **Methodology.** The studies supported by this TC will employ field experiments and/or vignette laboratory experiments in at least two countries of the region, potentially Argentina, Chile, Jamaica, or Peru, given their interest in incorporating AI-based tools in their public administration processes with support from the IDB. The experiments will tentatively be designed as follows. Each will include at least 80 public servants each from one public institution, with similar roles to ensure task homogeneity. The experiments will take place. Each participant will complete tasks across multiple rounds. The tasks will involve producing texts, with the type of text participants are asked to produce depending on the public service they belong to and their specific roles (e.g., policy design, drafting a response to a citizen, writing an email to a stakeholder). After collecting baseline data on an initial set of tasks, participants will be randomly assigned to a control group or one of two treatment arms. The control group will operate without GAI, while the treatment groups will have access to GAI-produced suggestions. One treatment arm will use a GAI platform providing biased and incorrect responses, while the other will use a platform providing unbiased responses and inputs. In the third set of rounds, all participants, including those in the control and treatment groups, will complete tasks without GAI recommendations. This is designed to estimate the impact of using GAI and then having it removed within the treatment groups. In a final set of rounds, participants in the treatment arms will compare different approaches to fomenting appropriate use of GAI. The treatment arms include: (i) no intervention; (ii) participation in short training prior to commencing the tasks; (iii) receipt of periodic nudges during the task exercises with messages on responsible use; (iv) receipt of a warning regarding possible disciplinary sanctions in the event of irresponsible GAI use.
- 2.8 **Data.** The outcomes that will be measured include: (i) productivity: the number of cases a public servant resolves in a fixed amount of time; (ii) technical quality: accurateness and depth of information used in participant tasks; (iii) bias: decisions based on irrelevant demographic characteristics; (iv) noise: consistency across equivalent cases; (v) effort: number of tasks performed to complete an assignment
- 2.9 These outcomes will be generated through the laboratory experiments. Productivity will be measured through a simple count of tasks completed during a fixed time period. The variables pertaining to technical quality, bias, and noise will be generated through an evaluation of the tasks completed by participants conducted according to a predesigned rubric. The measure of effort will be constructed through analysis of the materials consulted and generated in the context of each task completed by the participants.
- 2.10 Individual-level data that will be gathered includes age, gender, education level, major studied, academic performance, prosocial motivation, and interpersonal trust, among potential others. Data on demographic characteristics will be obtained through an entry survey. Measures of prosocial motivation and interpersonal trust will be generated through a questionnaire applied prior to commencing the experiments.
- 2.11 **Strategic alignment.** The TC is consistent with the IDB Group Institutional Strategy: Transforming for Scale and Impact (CA-631) and is aligned with the objective of reduce poverty and inequality by promoting more effective, citizen-centered public services that enhance accessibility, quality, and inclusivity for everyone. The TC is also aligned with the operational focus area of Institutional Capacity, Rule of Law, and Citizen

Security, as it will enable a more productive public sector through the responsible use of generative AI. The project aligns with Priority Area of "Effective, Efficient and transparent Institutions" (W2C) of the Ordinary Capital Strategic Development Program (GN-2819-14) objectives by: (i) contributing to more effective, efficient, transparent, and citizen-centered public policies and institutions; and (ii) enhancing service delivery to citizens by strengthening institutional and policy quality. Additionally, it supports Priority Area of "Inclusive Economic Growth" (W2F) of the Ordinary Capital Strategic Development Program (GN-2819-14)'s goal of developing and applying multidisciplinary solutions and analytical frameworks, integrating approaches from various social sciences to equip policymakers with tools that promote growth reforms and agendas in the region, accelerating progress in institutional capacity and the rule of law. It is also aligned with the Sector Strategy on Institutions for Growth and Social Welfare (GN-2587-2) for contributing to the theme of Institutions for Innovation and Technological Development, specifically to the objectives: (i) improve government policies and action in the ICT sector; (ii) develop advanced human capital; and (iii) strengthen institutions and networks. The project is fully aligned with the Bank's Personal Data Privacy Policy (GN-3030), and its implementation will adhere to all outlined privacy guidelines.

- 2.12 **Complementarities with other IDB Group operations.** The study is specifically supportive of the IDB's regional operational agenda in digital government: it could inform both the design of public official training programs and government-wide policies financed by projects including [5895/OC-UR](#), [5834/OC-PE](#), [5501/OC-PN](#), [5758/OC-CH](#), and [5841/OC-TT](#). It is specifically aligned with the activities of [5758/OC-CH](#), which include support for the drafting of policies, strategies, and guidelines on digital matters for the public administration.

III. Description of activities/components and budget

- 3.1 **Component 1. Knowledge generation (US\$160,000).** The objective of this component is to conduct experiments that enable a thorough analysis of the impact of GAI on decision-making processes within the public sector. It will finance the activities necessary to complete the laboratory experiments and subsequent data analysis, including: (i) design of the pre-task questionnaire, tasks, evaluation rubrics, and GAI prompts, treatments (ex-ante training, nudges, disciplinary sanction messages), and data collection rubrics; (ii) design of the desktop application where participants will complete tasks, which will also serve as a data collection mechanism; (iii) logistical expenses (e.g. space rental, participant incentives, food); and (iv) field coordination (e.g. to facilitate participant enrolment).
- 3.2 **Component 2. Dissemination (US\$25,000).** The objective of this component is to enhance the reach and impact of the project findings by producing high-quality, accessible reports and disseminating them effectively. Reports will be published on the IDB publications website. Dissemination events may include webinars, in-person conferences, and presentations to specific government counterparts, among others¹⁹. This component will finance the activities necessary to produce the report(s) stemming from the project and disseminate them, including (i) report editing, translation, and

¹⁹ Potential partners for dissemination events include the regional digital government network, *Red GEALC*, and the *Centro Latinoamericano de Administración para el Desarrollo*, among others. Reports will be published on the IDB publications website.

design; and (ii) logistics costs of dissemination events in the country of implementation (e.g. promotional materials, space rental, panelist fees).²⁰

- 3.3 **Results.** The overall impact of this TC will be an increase in public sector productivity through the appropriate utilization of GAI. This will be achieved through the generation of knowledge about the impact of GAI on public sector decision-making and how best to encourage its responsible use. The specific result is the production and dissemination of a report summarizing the results of the laboratory experiments on the impact of GAI in the public sector and the mechanisms to promote its responsible use.
- 3.4 **Budget.** The total budget of the TC is US\$185,000 and will be funded by OC SDP Window 2 - Institutions (W2C) with US\$92,500, and OC SDP Window 2 – Economic Growth (W2F) with US\$92,500.

Indicative Budget (US\$)

Activity/Component	Description	W2C	W2F	Total IDB
Component 1. Knowledge generation				
1.1 Implementation	Design of the pre-task questionnaire, tasks, evaluation rubrics, and GAI prompts, treatments, and data collection tools	67,500		67,500
1.2 Design and analysis	Design of the desktop application where participants will complete tasks		92,500	92,500
Component 2. Dissemination				
2.1 Report production	Editing, translation, design	12,000		12,000
2.2 Dissemination events	E.g. promotional materials, space rental, panelist fees	13,000		13,000
Total		92500	92500	185,000

IV. Executing agency and execution structure

- 4.1 The Executing Agency for the TC will be the IDB. This is justified given that this is a Regional Technical Cooperation where a regional entity with legal capacity to execute the TC cannot be identified (in accordance with OP-619-4's Annex 2, Paragraph 2.2), the Bank's unique expertise in managing complex research projects such as this, and the familiarity of Bank staff in following IDB fiduciary policies. The Team Leader, in coordination with team members, will coordinate the execution of the activities of the TC. The activities to be executed under this TC have been included in the Procurement Plan and will be executed following the IDB policies for: (i) hiring of individual consultants, as established in Complementary Workforce (AM-650); and (ii) hiring of consulting firms for services of an intellectual nature and the contracting of logistics

²⁰ Prior to the start of any dissemination activity, the corresponding government's no-objection letter will be obtained.

services and non-consulting services, according to Corporate Procurement Policy (GN-2303-33) and its associated Guidelines.

- 4.2 The knowledge products generated from Bank-executed activities within this technical cooperation will be the property of the Bank and may be made available to the public under a creative commons license. However, at the request of the beneficiary, in accordance with the provisions of AM-331, the intellectual property of said products may also be licensed through specific contractual commitments that shall be prepared with the advice of the Legal Department.

V. Major issues

- 5.1 The two main risks associated with this project are: (i) Finding local partners for the implementation of the experiments. This risk will be mitigated by prioritizing countries and specific institutions that have shown interest in topics surrounding AI; and (ii) If the team cannot recruit enough participants to the experiments, there will not be a sufficiently large sample size with which to conduct the necessary econometric analysis. This risk will be mitigated by implementing a snowball methodology to increase the number of participants.

VI. Exceptions to Bank policy

- 6.1 There will be no exceptions to the Bank's policies.

VII. Environmental and Social Aspects

- 7.1 This TC will not finance feasibility or pre-feasibility studies of investment projects or associated environmental and social studies, and thus does not have applicable requirements of the Bank's Environmental and Social Policy Framework (ESPF).

Required Annexes:

[Results Matrix_69032.pdf](#)

[Terms of Reference_94698.pdf](#)

[Procurement Plan_9566.pdf](#)