

TC Document Template

I. Basic Information for TC

▪ Country/Region:	REGIONAL
▪ TC Name:	Evaluating AI interventions to reduce bias
▪ TC Number:	RG-T4601RG-T4601
▪ Team Leader/Members:	Duryea, Suzanne (SCL/GDI) Team Leader; Soares, Yuri Suarez Dillon (LAB/STI) Alternate Team Leader; Aparicio Linale, Gabriela (DSP/DVF); Caballero Gamero Jesus David (SCL/GDI); Ventocilla Guerra Maria Claudia (LAB/STI); Rachter De Sousa Dias, Laisa (SCL/GDI); Bernal Lopez, Juanita (SCL/GDI); Senra, Rocio (SCL/GDI); Diaz Gill Virginia Maria (LEG/SGO); Echeverry Penon, Isabela (DIS/CCO); Balestrini, Mara; Carrasco, Carolina E.; Moraes Amorim, Luana Team Leader; Soares, Yuri Suarez Dillon (LAB/STI) Alternate Team Leader; Aparicio Linale, Gabriela (DSP/DVF); Caballero Gamero Jesus David (SCL/GDI); Ventocilla Guerra Maria Claudia (LAB/STI); Rachter De Sousa Dias, Laisa (SCL/GDI); Bernal Lopez, Juanita (SCL/GDI); Senra, Rocio (SCL/GDI); Diaz Gill Virginia Maria (LEG/SGO); Echeverry Penon, Isabela (DIS/CCO); Balestrini, Mara; Carrasco, Carolina E.; Moraes Amorim, Luana, Michelle Moreno (ITE/IPS)
▪ Taxonomy:	Research and Dissemination
▪ Operation Supported by the TC:	
▪ Date of TC Abstract authorization:	27 Aug 2024
▪ Beneficiary:	Women and/or Afro-descendants in Colombia and Brazil.
▪ Executing Agency and contact name:	Inter-American Development BankInter-American Development Bank
▪ Donors providing funding:	Social Development (W2E) and Economic Growth (W2F)OC SDP Window 2 - Economic Growth(W2F); OC SDP Window 2 - Social Development(W2E)
▪ IDB Funding Requested:	OC SDP Window 2 - Social Development (W2E): US\$62,500.00 OC SDP Window 2 - Economic Growth (W2F): US\$62,500.00 Total: US\$125,000.00 US \$125,000
▪ Local counterpart funding, if any:	US\$0
▪ Disbursement period (which includes Execution period):	36 months
▪ Required start date:	January 2025
▪ Types of consultants:	PECs and firm
▪ Prepared by Unit:	SCL/GDI-Gender and DiversitySCL/GDI, LAB/STI, and IDB Invest/DVF
▪ Unit of Disbursement Responsibility:	SCL/GDI-Gender and Diversity
▪ TC included in Country Strategy (y/n):	Yes
▪ TC included in CPD (y/n):	No
▪ Alignment to the IDB Group Institutional Strategy: Transforming for scale and impact 2024-2030:	Afro-descendants; Diversity; Gender equality; Productivity and innovation; Social inclusion and equalityYes

II. Objectives and Justification of the TC

- 2.1 Evidence shows that women and Afro-descendants are less likely to obtain credit, and less likely to be hired for jobs than white males with otherwise similar characteristics. Addressing these gender and racial biases is important to build a more equitable region. However, there are still important questions about what tools can be effective to reduce gender- and racial-biases in credit and labor markets, and particularly, whether Artificial Intelligence (AI) can be used to address these challenges.
- 2.2 Gender-related barriers to financing are widespread. One in four firms in LAC are run by women, with growth and productivity constrained by gender biases. Women-owned small and medium enterprises (SMEs) face an estimated US\$156 billion credit gap, larger than in any other region (IFC, 2017). A randomized correspondence study conducted in Chile found that loans requested by women were 18% less likely to be approved than identical loans requested by men (Montoya et al., 2020). Other studies have found that women in Mexico face unequal treatment by loan officers and are likely to be offered higher interest rates for their business and mortgage loans, smaller amounts, or shorter duration than, otherwise identical, male counterparts (Hernandez-Trillo and Martinez-Gutierrez, 2022). In Colombia, women are 5% less likely to access microcredit and if approved, receive amounts that are 16% lower than those approved for men. These results mirror the global evidence, where women are systematically at a disadvantage in obtaining credit, and on amounts approved conditional on obtaining credit.
- 2.3 Gender-related barriers in hiring for jobs are also widespread. Data shows that more gender diverse companies tend to have higher profitability, making a strong argument for gender and racial diversity at the corporate level.¹ However, achieving a diverse workforce remains a challenge. With regards to gender, for example, it is well documented that persisting social norms and stereotypes continue relegating women to certain roles, hindering their economic empowerment, perpetuating access gaps in different domains (income, labor markets, property, health, education, STEM careers, to name a few) and relegating them to take the majority of the caregiving responsibilities.
- 2.4 Racial bias in credit and hiring decisions has also been documented in the region. Studies in Mexico have found that Afro-descendants were 12 ppts more likely to be rejected for credit, controlling for other observable factors (Hernandez-Trillo and Martinez-Gutierrez, 2022). A recent study of Brazil has found that employer preferences for white workers explains approximately 6-7% of the racial wage gap (Gerard et al., 2021).
- 2.5 This technical cooperation aims to evaluate the effectiveness of two highly innovative and scalable AI interventions aimed at reducing discrimination in credit scoring and hiring decisions by removing information, such as gender and race, considered to be irrelevant to the decision at hand. The two distinct but related applications are inspired by the groundbreaking research of Goldin and Rouse (2000) that found that "blinding" or anonymizing auditions for orchestras decreased the gender gap in the selection of musicians. AI technologies to remove bias are sweeping private industry and being adopted in the public sector as well. The results of Goldin and Rouse have since been

¹ <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters>

found in a number of settings across different geographies (see Riach and Rich, 2002 and Neumark, 2016 for reviews). At the same time, few studies exist on the impact of these technologies across gender and race with the existing literature finding some unintended consequences of the first generation of these technologies that removed personal information on gender and race (Fuster et. al 2022, Kirgios et al. 2022, Behaghel et al. 2015).

- 2.6 Quipu is a Fintech platform that uses AI to calculate a credit score for microentrepreneurs who are excluded from formal credit due to a lack of a credit history. Quipu focuses on continuous improvement, constantly improving the AI algorithm it uses for credit decision, as well as providing the algorithm with additional training data. The platform has provided credit to 7000 microentrepreneurs since 2022 and is expanding rapidly. Applications are received through WhatsApp and approved clients receive the funds (typically a few hundred dollars) in less than a week. Quipu has partnered with Quantil, a company specialized in optimizing AI algorithms to remove potential biases. The AI algorithm uses information that has a legitimate relevance to credit such as transaction information and banking information, but not the gender or race of the entrepreneur to determine borrower creditworthiness. Quipu's credit model does not include personal interviews or any other form of person-to-person interaction, and therefore has the potential to eliminate biases that are typically found in traditional banking. Traditional financial institutions rely on humans in the credit decision-process, thus introducing unconscious gender and race biases. These innovations in the credit model allow Quipu to reach clients who would otherwise only have access to informal credit; however, they have yet to demonstrate the effectiveness of credit for this population.
- 2.7 Jobecam is an HR tech platform in Brazil that applies AI techniques to anonymize gender and other demographic information of job candidate CVs and interviews. Identifying information including names, age, gender, and race is removed from CVs. Pre-recorded and/or live-stream interviews are presented to recruiters with an anonymized image (an avatar) and anonymized voice (without gender) of the candidates. The Jobecam technology is a significant advancement in that it uses AI technology to anonymize voice and appearance in the remote interview phase of hiring.
- 2.8 **Objective.** The objective of the TC is to evaluate the impact of the AI algorithms used by Quipu and Jobecam on women and Afro-descendants, and specifically measure the differential effects of these AI algorithms in the decisions about credit approval and hiring-related decisions.
- 2.9 **Beneficiaries.** The main beneficiaries of the TC will be women and Afro-descendants in Colombia and Brazil who are expected to have higher access to lending with the AI algorithms used by Quipu and higher probabilities of making the short lists in hiring panels, for recruitment using the AI technology through Jobecam.
- 2.10 The TC supports analytical products associated with companies that are being financed by IDB Lab. In particular, Quipu and Jobecam received financing from IDB Lab as part of the projects "Promoting financial inclusion for vulnerable women" (CO-G1050) and "The workplace diversity booster" (BR-G1021), respectively. Both Quipu and Jobecam were selected as part of the IDB Lab "Gender and Artificial Intelligence Challenge" launched in 2022 to promote open innovation. The results of the TC will

generate knowledge regarding the potential impact in improving living conditions for those who are excluded from lending (Quipu) or from labor markets (Jobecam).

- 2.11 Most importantly, the TC will expand and complement the monitoring and evaluation (M&E) tasks that are already being carried-out as part of the implementation of the IDB Lab projects. The data collection systems and processes financed with this TC will help Quipu and Jobecam to strengthen their M&E capacities. In addition, the TC will allow to adopt more rigorous evaluation methodologies and take advantage of a control group to isolate the impacts AI from other confounding factors that may also affect the results.
- 2.12 **Synergies.** The countries of Colombia and Brazil have been selected for this knowledge exercise given the innovative technology being applied by the fintech companies Quipu and Jobecam and considering the countries where they currently operate. The TC also has important synergies with various other operations from IDB Lab and IDB. For example, the TC has synergies with IDB Lab's fAIr LAC Initiative which develops frameworks tools and best practices that are aligned to international standards to promote transparency equity and accountability in the implementation of AI. Regarding the IDB, the TC complements a project to boost the adoption of AI by the public sector in Latin America and the Caribbean (RG-T4439), being implemented by the modernization of the state sector. The TC is also related to operations such CO-L1258 which highlights barriers to accessing credit for women and Afro-descendants and BR-L1523 which supports job placement policies through public employment services.
- 2.13 The results from this TC can inform future IDB, IDB Lab, and IDB Invest operations in various ways. In the case of IDB operations, the lessons about anonymization can be applied to reducing bias in public services such as labor market intermediation services. In the case of IDB Invest, the experiment with Quipu will help to inform how scoring algorithms of financial intermediaries can reduce (or exacerbate) biases. Likewise, the experiment can provide some guidance on the feasibility of extending credit to high-risk individuals. Both of these datapoints will complement ongoing efforts at IDB Invest to improve the impact of operations with FIs. In the case of IDB Lab, the work complements IDB Lab's existing initiatives to promote the ethical and fair use of artificial intelligence, particularly in the case of Jobecam. Furthermore, IDB Lab is growing its portfolio of companies in the HR and worker-tech fields, and the use of fully anonymized talent sourcing, if feasible at the market level and effective at reducing bias, could provide a model that these companies would be able to replicate or integrate into their existing services.
- 2.14 **Lessons Learned.** The TC design considers lessons learned from previous IDB and IDB Lab projects. Amongst the main lessons incorporated include: (1) The importance of partnering with companies whose objectives are aligned with those of the TC, particularly rigorous knowledge generation; and (2) setting realist timelines giving challenges that often arise during implementation.
- 2.15 **Strategic Alignment to IDBG priorities.** The Program is consistent with the IDB Group Institutional Strategy: Transforming for Scale and Impact (CA-631) and is aligned with the objective(s) of: (i) reduce poverty and inequality due to its objective to increase gender equality in credit and labor markets; and (iii) bolster sustainable regional growth by making the allocations of resources more efficient, ensuring that

credit and jobs are allocated based on qualification and not based on gender or race. The Program is also aligned with the operational focus area(s) of: (ii) gender equality and inclusion of diverse population groups; and (v) productive development and innovation through the private sector. Through the focus on improving credit and hiring opportunities for groups excluded from lending and employment, the TC is aligned with the objectives and activities of the Ordinary Capital Strategic Development Program (OC SDP), Window 2: Priority Area 5: Inclusive Social Development (W2E) as well as Window 2: Priority Area 6: Inclusive Economic Growth (W2f) (GN-2819-14).

- 2.16 **Strategic Alignment to Country priorities.** The TC is aligned to the IDB Group Country Strategy with Colombia 2019-2022 (GN-2972)² as it contributes to reduce bias in credit risk algorithms (paragraph 3.5). The TC also contributes to the strategic objective of promoting greater social inclusion, by deriving lessons learned that can be used to improve equity in credit and labor markets. In addition, the TC is aligned to the Country Strategy with Brazil (GN-2973 and GN-2973-3) in that it harnesses new local digital technologies to reduce inequality (paragraph 3.42). Lastly, the Gender and Diversity Sector Framework Document (GN-2800-13) highlights the importance of addressing the knowledge gap for reducing bias against diverse groups in the region and the role of IDB Lab in testing potentially scalable digital solutions (paragraphs 3.55 and 5.1).

III. Description of activities/components and budget

- 3.1 This TC involves the implementation of two components.

- 3.2 **Component I: Component I (\$75,500). Data Collection.** As the Quipu and Jobecam platforms will be the main source of data for the evaluations, some modifications are necessary to these platforms to be able to collect more robust information on demographic characteristics and outcomes, both for treatment and control groups. This TC component will finance data collection activities for both interventions, focusing on changes to the company's platform for Jobecam, and on the purchase of data from existing platforms for Quipu. Procedures to protect the confidentiality of the data collected will be followed. More specifically, the main activities under this component are as follows:

- *Data collection for Jobecam (\$36,000):* In the case of Jobecam, the TC budget will finance the design and implementation of changes to the existing data collection platform and processes necessary for conducting the study. For Jobecam the key metrics include administrative information regarding the interviews, job offers, employment status, job tenure, and compensation. These changes will require hiring various developers including front-end and back-end developers.
- *Data collection for Quipu (\$22,500):* In the case of Quipu, the company is already in the process of changing its platform as part of its own strategy and budget. The changes that will be implemented will allow to collect data needed for the study, which will be complemented with external data. The TC will finance the purchase of data from credit bureaus and wallets to report on results for Quipu treated and

² The 2019-2022 strategy is valid until 2024.

non-treated. For Quipu the key metrics include access to credit, repayment rates, and income growth.

- *Administrative support activities (\$17,000)*. This support will be needed for the data collection as well as for other tasks of the TC implementation.

3.3 The outputs associated with the above-mentioned data collection activities include two Preliminary Assessment Reports (one for Quipu and a second for Jobecam), which will be completed by year 2 of the TC. The assessment reports will include information such as descriptive statistics of the data collected, etc.

3.4 **Component II: Component II (\$49,500) Evaluation Studies of AI Technologies.** This component focuses on the following research question: Can AI debiasing technologies applied to credit and hiring decisions improve outcomes for women and/or Afro-descendants? More specifically, the main activities under this component are as follows:

- *Implementation of the experiments for both Quipu and Jobecam (\$17,500 and \$16,000, respectively)*. The second component will finance the field coordination of the randomized control trials in Colombia and Brazil which includes preparing and implementing the randomization in collaboration with Quipu and Jobecam and preparing the data for analysis by the research team. Both companies will require continuous support and guidance to adequately design and implement the experiments, which will require changing the way in which they operate for a period of time. The outputs associated with this activity include two Field Reports (one for Quipu and a second for Jobecam), which will be completed after 36 months (by year 3 of the TC). The field reports will describe the design and the implementation of the experiments. The funds associated with this output are as follows:
- *Preparation of the Evaluation Study (\$6,000)*. The data collection and the implementation of the experiments are expected to allow for an evaluation study to be completed, based on the analysis of this information. The outputs associated with this activity include a single Final Evaluation Report or Technical Note, which will be completed after 36 months (by year 3 of the TC). The final evaluation report will include the analysis of the data, as well as the main findings, etc.
- *Knowledge dissemination through a Workshop (\$10,000)*. Lastly, a workshop will be organized to disseminate the main findings. The output associated with this activity will be the Workshop Agenda.

3.5 The evaluation study will answer key questions in the literature: An initial set of questions, such as access to credit by race and gender, can be addressed by simulating outcomes for applicants to the Quipu platform according to a standard algorithm versus the AI-enabled algorithm. However, a critical question being addressed in the TC is the broader impact of the AI algorithms. To assess the effectiveness of the alternative algorithm in producing development results, a randomized experiment will be applied in which microentrepreneurs applying for credit are randomized using the AI-enabled scoring algorithm and the mid-term outcomes beyond access to credit are measured, including repayment rates and income growth.

3.6 To evaluate the AI technologies applied by Jobecam, an experiment will be implemented in which the fully anonymous hiring model (anonymous screening and anonymous interviewing) is applied to a randomly selected set of candidates in the treatment group, while the partially anonymous (anonymous screening) hiring model is applied to the remaining candidates in the control group. The evaluation will assess

if fully anonymous interviewing practices are effective at reducing gender and diversity biases in interviews and job offers, and, if once hired, the candidates hired through Jobecam are able to match or surpass traditional employee selection mechanisms in key employment metrics, such as: (i) job tenure, and (iii) compensation.

- 3.7 The final outcomes of the TC will be the updated AI algorithms for both the Quipu and Jobecam Platforms. Based on the results of the experiments, these updated algorithms may be optimized to reduce gender- and race-biases, thus allowing to a more equitable allocation of credit and jobs.

IV. Indicative Budget. The TC's total budget is US\$125,000, financed by the OC SDP Window 2 – Social Development (W2E) US\$62,500 and OC SDP Window 2 – Economic Growth (W2F) US\$62,500. The execution and disbursement will be in 36 months. The table below shows the detailed budget.

Budget. The detailed budget is presented in the Table below:

Activity/Component	IDB/Fund Funding Social Development (WE2)	IDB/Fund Funding Economic Growth (WF2)	Total Funding
Component I - Data Collection	\$62,500	\$13,000	\$75,500
Data Collection activities (Quipu): Purchase data and data-related related services from existing platforms.	\$22,500	\$0	\$22,500
Data Collection activities (Jobecam): Perform changes to the company's platform to allow for data collection (3 separate developers).	\$36,000	\$0	\$36,000
Administrative support activities (Quipu and Jobecam): Administrative support for data collection, implementation of experiments, and additional tasks.	\$4,000	\$13,000	\$17,000
Component II - Evaluation Studies of AI Tech	\$0	\$49,500	\$49,500
Implementation of the experiment (Quipu): Hire a field coordinator to support the company with the implementation of the RCT	\$0	\$17,500	\$17,500
Implementation of the experiment (Jobecam): Hire a field coordinator to support the company with the implementation of the RCT	\$0	\$16,000	\$16,000
Preparation of the Evaluation Study (Quipu or Jobecam): Hire a technical profile to prepare a study reporting on the key findings.	\$0	\$6,000	\$6,000
Knowledge dissemination through a Workshop (Quipu and Jobecam): Organize a workshop to disseminate the findings.	\$0	\$10,000	\$10,000
Total	US\$ 62,500.00	US\$ 62,500.00	US\$ 125,000.00

V. Executing Agency and Execution Structure

- 5.1 As a regional research and dissemination TC, the Bank will act as the executing agency. The UDR will be SCL/GDI. All procurement to be executed under this Technical Cooperation have been included in the Procurement Plan (Annex IV) and will be hired in compliance with the applicable Bank policies and regulations as follows: (a) Hiring of individual consultants, as established in the regulation on Complementary Workforce (AM-650) and (b) Contracting of services provided by consulting firms in accordance with the Corporate procurement Policy (GN-2303-33) and its Guidelines.
- 5.2 This TC will be executed by the Bank through GDI in collaboration with IDB Lab and IDB Invest. The main reason for this execution structure is that the Bank has developed strong expertise in the evaluation of interventions. Team members from GDI, IDB Lab, and IDB Invest have extensive experience with leading the type of evaluation methodology applied in this project. The execution structure will also encourage synergies across other research projects exploring impacts of anonymization in different domains. This accumulated expertise will ensure that the findings are embedded in future Bank operations and policy dialogue.
- 5.3 Any knowledge products generated within the framework of this technical cooperation will be the property of the Bank and may be made available to the public under a creative commons license. However, upon request of the beneficiaries, the intellectual property of said products may also be licensed and/or transferred to the beneficiaries through specific agreements.
- 5.4. In the event that the execution of the components foreseen in the project requires coordination with Government entities, the corresponding non-objection letter will be requested before starting activities in the respective country.

VI. Project Risks and Issues

- 6.1 The main risk associated with the experiments to be carried out by Quipu and Jobecam is that the company strategy becomes incompatible with carrying out the agreed experiments, and as a consequence, they are not completed. As both companies are pursuing ambitious growth objectives, alignment of the experiment with the critical path for funding and growth for both Quipu and Jobecam is fundamental. We see an impact evaluation as an important analytic input that would validate the value added of each of the two companies with clients, partners, and funders, therefore we see the risk as mitigated. Furthermore, since Jobecam relies on a client to serve as a host for the experiment, the experiment's success will depend on confirmation and commitment of this company to serve as host of the experiment in its hiring decisions. This last risk can be mitigated by actively pursuing potential client companies by IDB Invest and IDB Lab.
- 6.2 To minimize the risk of personal information being improperly stored or used, the Bank's Personal Data Privacy Policy (document GN-3030) will be followed in the execution of this TC. In compliance with this policy, all necessary measures will be

taken to avoid and/or minimize the Bank's access to personal data. In particular, to the extent possible, all data collected will be anonymized before being delivered to the Bank.

VII. Environmental and Social Aspects

7.1 This TC does not have applicable requirements of the Bank's Environmental and Social Policy Framework (ESPF).

Required Annexes:

[Results Matrix_31196.pdf](#)

[Terms of Reference_3764.pdf](#)

[Procurement Plan_96230.pdf](#)