

AI-Driven Platform Architecture for Business Plan Formulation in Indigenous Communities: A Gender-Focused Case Study in Colombia

Trujillo-Diaz Johanna, Victor Alonso Orellano-Calambas and Cielo Tatiana Lozano

Universidad Cooperativa de Colombia, Bogotá D.C. 111311, Colombia

johanna.trujillo@campusucc.edu.co; trujillojohanna@gmail.com,

lvioletatilopez@gmail.com; victoralfonso.orellano942@comunidadunir.net

Lopez-Ariza Laura V. Tatiana I

Fundación Universitaria Internacional de la Rioja, Bogotá D.C. 110221

Colombia Bogotá D.C. 110221, Colombia

Abstract

Colombia is currently undergoing a post-conflict transition after five decades of internal armed conflict. In response, the government has launched policies and programs to promote lasting peace and human rights, particularly targeting vulnerable populations located in Development Programs with a Territorial Approach (PDET). One such region is the municipality of Ataco, in the department of Tolima, which has been severely affected by the conflict. Ataco is home to part of the Pijao Indigenous Community (PIC), whose economy is primarily based on agriculture. The community faces significant socio-economic challenges, widespread technological illiteracy, and limited access to tools for developing business plans, investment projects, or entrepreneurial initiatives. Objective: This study aims to design and implement a digital platform powered by artificial intelligence (AI) to support the PIC in formulating productive projects and business plans. The goal is to enhance economic development, increase access to funding, and improve quality of life while preserving cultural identity. Methodology: The platform architecture includes a frontend developed using the Next.js framework for its scalability and robust documentation. The backend employs Xata as the Object-Relational Mapping (ORM) tool, offering a cost-effective and efficient solution for database management. The system integrates an AI-driven chatbot using APIs from OpenAI's GPT-4 and Meta's Llama-3, supported by tailored PROMTs to guide users through project formulation. For architectural evaluation, the Architecture Trade-Off Analysis Method (ATAM) is used to assess non-functional requirements and alignment with community goals. Results: The AI chatbot provides personalized guidance, step-by-step instructions, and dynamic prompts, significantly reducing the project formulation timeline from approximately one year to just 3–4 months. The chatbot is embedded within an intuitive digital platform interface that facilitates interaction, stores conversation data, and automatically generates final project documents. This solution enables the Pijao Indigenous users (PIU) to access expert-level support, overcoming barriers related to technological illiteracy and lack of specialized knowledge in business development. Conclusion: This platform represents a scalable, culturally adaptable tool for economic empowerment in Indigenous and post-conflict communities, setting a precedent for AI-assisted entrepreneurship development in marginalized contexts.

Keywords

Artificial intelligence, business plan, chatbot, ChatGPT, Colombia, digital platform, entrepreneurship, gender, Indigenous, invest project formulation, Llama-3, Natural Language Processing, NLP, Pijaos, Tolima, vulnerable communities, women.