Carolina Favaro Fricks

MIA: Your trip’s financial control fits in a single message.

SÃO PAULO
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Final Course Project submitted to the Institute of Technology and Leadership (INTELI), to obtain a bachelor's degree in Software Engineering

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Epigraph

> “Do not save what is left after spending, but spend what is left after saving.” WARREN, B.

Resumo

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Este trabalho apresenta o desenvolvimento de um chatbot integrado ao WhatsApp voltado ao controle financeiro pessoal durante viagens, com foco na automação do registro de despesas e na organização de informações financeiras. O objeto de estudo consiste na concepção e implementação de uma solução conversacional que utiliza o WhatsApp como interface principal, explorando sua ampla adoção e usabilidade para reduzir as barreiras de entrada no gerenciamento financeiro. O objetivo do projeto é permitir que os usuários registrem gastos de forma simples e natural, por meio de mensagens de texto, áudios e imagens de comprovantes, eliminando a necessidade de aplicações tradicionais complexas. O sistema realiza a extração automática de informações financeiras a partir de comprovantes e comandos em linguagem natural, categoriza despesas, associa os registros a viagens ativas e armazena os dados de forma estruturada para posterior análise. Como resultado, foi desenvolvido um protótipo funcional capaz de registrar despesas em tempo real, gerar resumos financeiros, acompanhar orçamentos de viagem e fornecer relatórios consolidados, demonstrando ganhos significativos de usabilidade, eficiência e precisão quando comparado a métodos manuais. Conclui-se que o uso de interfaces conversacionais integradas a serviços de inteligência artificial representa uma abordagem eficaz para democratizar o acesso ao controle financeiro, reduzir atritos operacionais, incentivar hábitos financeiros mais conscientes e apresentar forte potencial de evolução futura como um produto digital escalável.

Palavras-Chave: chatbot; controle financeiro pessoal; viagens; interfaces conversacionais; inteligência artificial.

ABSTRACT

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This work presents the development of a WhatsApp-integrated chatbot aimed at personal financial control during travel, with a focus on automating expense tracking and organizing financial information. The object of study consists of the design and implementation of a conversational solution that uses WhatsApp as its primary interface, leveraging its widespread adoption and usability to reduce entry barriers in financial management. The objective of the project is to enable users to record expenses in a simple and natural way through text messages, audio, and images of receipts, eliminating the need for complex traditional applications. The system performs automatic extraction of financial information from receipts and natural language commands, categorizes expenses, associates records with active trips, and stores data in a structured format for subsequent analysis. As a result, a functional prototype was developed that is capable of recording expenses in real time, generating financial summaries, tracking travel budgets, and providing consolidated reports, demonstrating significant gains in usability, efficiency, and accuracy when compared to manual methods. It is concluded that the use of conversational interfaces integrated with artificial intelligence services represents an effective approach to democratizing access to financial control, reducing operational friction, encouraging more conscious financial habits, and presenting strong potential for future evolution as a scalable digital product.

Key words: chatbot; personal financial control; travel; conversational interfaces; artificial intelligence.

Summary

1 Introduction

This work presents the conception and development of **MIA**, a WhatsApp-integrated conversational chatbot aimed at personal financial control during travel. The project is situated at the intersection of artificial intelligence, conversational interfaces, and digital financial management, addressing a recurring and relevant problem faced by travelers: the difficulty of tracking expenses efficiently, accurately, and consistently while on the move. By leveraging a widely adopted messaging platform and AI-driven automation, the project seeks to reduce friction in financial control and explore a scalable entrepreneurial opportunity in the digital products market.

1.1 Context and Motivation:

The area of expertise of this project lies in the development of AI-based conversational systems applied to financial management. Managing expenses during travel is a common challenge for individuals, especially in scenarios involving multiple payments, currencies, and informal records. Existing solutions are often based on complex mobile applications, spreadsheets, or delayed manual registration, which demand high effort from users and result in low adherence and poor data quality.

The identified market opportunity arises from the widespread adoption of WhatsApp as a daily communication tool and the growing demand for simple, intuitive, and automation-driven financial solutions. There is a gap in the market for lightweight, conversational tools that integrate naturally into users' routines without requiring the installation or learning of traditional financial applications. **MIA** is positioned to address this gap by transforming expense tracking into a natural conversational interaction.

1.2 Problem Definition and Value Proposition:

The core problem addressed by MIA is the operational friction involved in tracking travel expenses. Users often forget to register expenses, lose receipts, or postpone financial organization until after the trip, leading to incomplete records, inaccuracies, and limited financial visibility.

The value proposition of MIA is to simplify and automate this process through a conversational interface. By allowing users to record expenses via text messages, voice notes, and images of receipts, the solution reduces cognitive and operational effort. Artificial intelligence techniques are used to extract relevant financial information, categorize expenses, associate them with active trips, and generate summaries automatically. In doing so, MIA alleviates the customer pain point by saving time, increasing accuracy, and encouraging more consistent financial control.

1.3 Objectives of the Work:

- General:

  To create and validate a computational solution for travel expense management based on a conversational interface and to develop a business plan for its introduction to the market.

- Specifics:
  - Implement automated extraction and categorization of expenses from text, audio, and receipt images;
  - Validate the solution with potential users to assess usability and perceived value;
  - Define a scalable revenue and business model for market entry;
  - Analyze the feasibility of future product expansion and integrations.
  - Develop a functional MVP of **MIA** integrated with WhatsApp;

1.4 Justification and Contributions:

From a market perspective, **MIA** addresses a growing demand for user-centric, frictionless financial tools aligned with everyday digital habits. Technologically, the project contributes to the practical application of conversational interfaces and artificial intelligence in personal finance, demonstrating how AI can be embedded into widely used messaging platforms. Economically, the solution presents potential for scalability, low distribution costs, and the creation of new digital business models based on automation and data intelligence.

Overall, the project contributes by combining technological innovation with entrepreneurial vision, offering a viable solution to a real customer problem while laying the foundation for a scalable digital product.

1.5 Work Structure:

This work is organized into chapters that progressively present the conception, development, validation, and evaluation of the MIA project.

Chapter 1 – Introduction
This chapter presents the context and motivation for the project, defining the problem addressed, the market opportunity, the objectives of the work, and its relevance from a technological and business perspective.

Chapter 2 – Market Analysis and Business Context
This chapter discusses the market landscape in which MIA is inserted, including market sizing through TAM, SAM, and SOM analysis, customer segmentation, and profiling. It also presents a competitive analysis and identifies the main differentiators of the proposed solution.

Chapter 3 – Technological Solution
This chapter describes the computational and technological aspects of the solution, including system architecture, technologies used, functional and non-functional requirements, and the main use cases supported by the platform.

Chapter 4 – Development and Implementation

This chapter details the development process of the Minimum Viable Product (MVP), the adopted methodology (Scrum), the sprint structure, implemented features, and technical decisions made during implementation.

Chapter 5 – Business Model and Go-to-Market Strategy

This chapter presents the Business Model Canvas (BMC), revenue model, pricing strategy, marketing and sales approach, and the go-to-market strategy for launching and scaling the product.

Chapter 6 – Validation and Results

This chapter discusses the validation methodology used to test the business hypotheses, presents market feedback, engagement metrics, and analyzes the results obtained from real user interactions with the MVP.

Chapter 7 – Financial Feasibility and Risk Analysis

This chapter analyzes the financial viability of the project, including cost structure, revenue projections, break-even analysis, key performance indicators (KPIs), and a risk assessment with corresponding mitigation strategies.

Chapter 8 – Conclusion and Future Work

This chapter summarizes the main findings of the project, evaluates the achievement of the proposed objectives, discusses limitations, and outlines possible future developments and expansion opportunities for MIA.

2 Solution Development

2.1 Definition of Market Assumptions and Hypotheses:

This section presents the main market assumptions and hypotheses that guided the design, development, and validation of the MIA solution. These hypotheses were formulated based on initial market research, benchmarking, and early user

interviews, and served as a foundation for both the technological and business decisions throughout the project.

2.1.1 Problem Hypothesis

The primary assumption is that frequent travelers face significant friction in controlling personal expenses during trips, especially when expenses occur in multiple contexts (transportation, food, accommodation, and leisure).

Most travelers currently rely on manual methods, such as notes, spreadsheets, or generic finance applications, which are not designed for real-time use during travel and require additional effort, leading to low adherence and incomplete expense tracking.

Hypothesis:
Travelers who use WhatsApp daily struggle to track travel expenses in real time and are willing to pay for a simple, low-friction solution that allows them to record expenses naturally through text, voice, or images within a familiar messaging environment.

2.1.2 Solution Hypothesis

The proposed solution assumes that a conversational interface integrated into WhatsApp is the most effective way to reduce friction and increase adherence to expense tracking during travel.

By allowing users to register expenses using natural language, voice messages, or photos of receipts—without installing a new application—the solution leverages an already adopted channel and minimizes behavioral change.

Hypothesis:
A WhatsApp-based chatbot using artificial intelligence for expense extraction and categorization is a more effective and accessible solution for travel expense control than traditional standalone financial applications.

2.1.3 Value Hypothesis

The value hypothesis assumes that users perceive sufficient value in the convenience, time savings, and clarity provided by MIA to justify a subscription-based pricing model.

Given the low cognitive effort required to use the system and the recurring nature of travel expenses, users are expected to accept a monthly fee aligned with common digital subscription standards in the Brazilian market.

Hypothesis:
Users are willing to pay a monthly subscription fee of approximately R$ 19.90 for a premium version of the service, as the perceived value of real-time expense tracking, automated categorization, and financial summaries exceeds the cost.

2.2 Market Sizing and Analysis:

This section presents the market sizing analysis for MIA, using the **TAM, SAM, and SOM framework**, as well as a detailed description of the target customer segment and persona. The objective is to quantify the market opportunity and demonstrate alignment between the proposed solution, the MVP scope, and the business feasibility.

2.2.1 Market Size (TAM, SAM, SOM):

This subsection presents the market sizing analysis for MIA, using the TAM (Total Addressable Market), SAM (Serviceable Addressable Market), and SOM (Serviceable Obtainable Market) framework. The estimates are based on demographic data, user behavior in Brazil, benchmarks from early-stage B2C fintechs, and intentionally conservative assumptions to ensure methodological rigor and consistency with the financial plan of the project.

The **Total Addressable Market (TAM)** represents the total theoretical market of users who could benefit from a personal travel expense management solution integrated with WhatsApp.

Brazil has approximately 120 million adults, of which around 70% travel at least once per year, either for leisure or work. WhatsApp penetration among Brazilian adults

exceeds 95%, and the platform is widely used for financial interactions such as banking alerts, Pix transactions, and customer support.

Based on these factors, the TAM is estimated at:

- Approximately 85 million potential users

Assuming a theoretical average ARPU of R$ 100 per year, if all users adopted and paid for a dedicated travel expense management solution, the total financial TAM would be:

- TAM ≈ R$ 8.5 billion per year

This value represents the upper bound of the market and is used solely as a reference for total potential, without implying short-term capture.

The **Serviceable Addressable Market (SAM)** corresponds to the portion of the TAM composed of users who not only travel but also actively attempt to manage or track their expenses, even if through manual or inefficient methods.

For the definition of the SAM, the following criteria were considered:

- Traveling at least once per year;
- Attempting to record or organize expenses (spreadsheets, apps, notes);
- Familiarity with digital financial tools.

Studies on personal finance tool adoption indicate that only 15% to 20% of travelers consistently engage in expense tracking behaviors.

Applying this proportion to the TAM results in:

- SAM ≈ 13 to 17 million users

Assuming a conservative annual ARPU of R$ 90, the estimated financial value of the SAM is:

- SAM ≈ R$ 1.2 to R$ 1.5 billion per year

This segment represents users with a clear pain point and a higher likelihood of adopting the proposed solution.

The **Serviceable Obtainable Market (SOM)** represents the portion of the SAM that MIA can realistically capture within its first three years of operation, considering that the product is at an MVP stage and that user acquisition will rely primarily on organic channels, referrals, and limited partnerships.

Based on benchmarks from early-stage B2C fintechs in Brazil, a capture rate of approximately 0.2% of the SAM over three years is considered realistic.

Using an average SAM value of 15 million users, this results in:

- Estimated total users (free + paid): ~30,000

Assuming a freemium-to-paid conversion rate of 5%, aligned with conservative industry standards, the projected number of paying users is:

- Approximately 1,500 paying users

With an average annual effective ARPU of approximately R$ 199 the estimated financial SOM is:

- SOM ≈ R$ 298,500 per year (Year 3)

For sensitivity analysis purposes, a controlled variation of approximately ±25% is considered, resulting in a narrow and realistic range between:

- R$ 223,875 and R$ 373,125 per year

This value reflects a market validation scenario, rather than a scale scenario, and is fully aligned with the financial strategy and maturity stage of the product.

2.2.2 Customer Segmentation and Profiling

This section presents the customer segmentation and target user profiling for the WhatsApp-based travel financial management system. The segmentation was

defined based on the functional scope effectively implemented in the MVP, the results of the market research conducted, and the value proposition of the solution. Collaborative features for group travel were identified as relevant but are treated as future extensions and are therefore not considered part of the primary target segment at this stage.

Primary Target Segment – Individual Travelers

The primary target segment of the system consists of individual travelers who travel for leisure or work and seek a simple and automated way to record and monitor expenses during their trips.

These users typically:

- Travel one to three times per year;
- Use WhatsApp as their main communication channel;
- Have previously attempted to track expenses using spreadsheets, note-taking applications, or generic financial apps;
- Experience difficulties maintaining consistent records due to time constraints and the effort required for manual data entry.

The main pain point for this segment is the lack of practicality in registering expenses at the moment they occur, which leads to forgotten entries, incomplete financial records, and inefficient post-trip organization.

The proposed solution directly addresses these issues by enabling:

- Fast expense registration via text messages or receipt images;
- Automatic currency conversion;
- Expense categorization;
- Periodic financial summaries delivered through WhatsApp.

Secondary Segment – Group Travelers (Future Scope)

Travelers who move in groups, such as friends, families, or colleagues, were identified during the market research as a relevant segment with strong needs

related to expense sharing and collaborative financial control. However, group expense management functionalities were not implemented in the MVP.

As a result, this segment is considered a secondary target and is included in the product roadmap as a future expansion. The system architecture was designed to support multi-user travel scenarios in later versions, once the core value proposition for individual travelers is validated.

Core Persona of the MVP

Based on the implemented scope, the core persona of the MVP can be described as follows:

- Adult aged between 25 and 45 years;
- Individual traveler (leisure or business);
- Frequent WhatsApp user, including for financial-related interactions;
- Values simplicity, speed, and low cognitive effort;
- Seeks real-time visibility of travel expenses without relying on complex applications.

This persona reflects the user profile that is best served by the current version of the system and demonstrates strong alignment with the proposed value proposition.

Alignment Between Segmentation and Product Strategy

Focusing the MVP on individual travelers allowed the project to reduce technical complexity and implementation risks while directly addressing the core problem of travel expense tracking. The decision to postpone group travel features reflects an incremental development strategy aligned with best practices in software engineering and digital product validation.

This segmentation ensures coherence between the implemented functionality, the defined target market, and the overall business and technical strategy of the solution.

2.3 Competitive Analysis and Differentials:

This subsection presents an analysis of the competitive landscape and business environment of the proposed WhatsApp-based travel financial management system. The analysis includes the identification of direct and indirect competitors, an evaluation of their main features, pricing approaches, strengths and weaknesses, and the definition of the competitive advantages and differentiating factors of the proposed solution.

The competitive environment of the solution can be divided into direct and indirect competitors, depending on their level of overlap with the proposed value proposition.

Direct Competitors

Direct competitors are solutions that offer expense tracking through conversational interfaces, particularly via WhatsApp or similar messaging platforms.

- **Financinha**: A WhatsApp-based expense tracking tool that allows users to register expenses via text or images and receive summaries.
- **GranaZen**: A financial assistant integrated with WhatsApp that uses artificial intelligence to record and categorize expenses.
- **EvaBank**: A digital bank with WhatsApp-based interaction that includes basic expense tracking features alongside banking services.

Although these tools share the same communication channel, they are designed for general-purpose personal finance management and do not focus specifically on the travel context.

Indirect Competitors

Indirect competitors include traditional personal finance and expense tracking solutions that require standalone applications or manual workflows.

Personal finance apps (e.g., Mobills, Organizze, GuiaBolso): Offer structured dashboards and budget tracking but require app installation and manual data entry.

Spreadsheet-based tracking (e.g., Excel, Google Sheets): Commonly used due to flexibility, but highly manual and error-prone.

Bank and credit card statements: Provide transaction history but lack categorization, real-time visibility, and contextual organization by trip.

These alternatives address similar user needs but introduce higher friction and lower usability during travel.

Competitor Analysis

The main competitors were analyzed according to pricing model, core features, and strengths and weaknesses, as summarized below.

Solution	Pricing Model	Core Features	Strengths	Weaknesses
Financinha	Subscription	Expense registration via WhatsApp, summaries	Easy access, no app required	No travel focus, limited automation
GranaZen	Subscription	AI-based expense logging, alerts	Conversational interface, automation	Generic finance use case
EvaBank	Subscription / Banking fees	Banking services, expense tracking	Integrated financial ecosystem	Not travel-oriented, higher complexity
Spreadsheets	Free	Custom expense tracking	Flexibility	Manual, error-prone, low usability

The analysis highlights that while competitors offer either conversational access or financial control, none combine a conversational interface with a travel-specific expense management focus in a lightweight and automated manner.

Competitive Advantage and Differentiating Factors

The proposed solution differentiates itself through a combination of channel strategy, functional focus, and user experience design, rather than through feature breadth.

The primary competitive advantages are:

- **Native WhatsApp integration**: The solution operates entirely within a platform already used daily by users, eliminating the need for application installation and reducing adoption barriers.
- **Travel-oriented financial context**: Expenses are organized by trip, with automatic currency conversion and summaries tailored to travel scenarios.
- **Low-friction data entry**: Expenses can be registered at the moment they occur through short text messages or receipt images, reducing cognitive and operational effort.
- **Automation through AI**: OCR and rule-based categorization reduce manual input and improve data consistency.
- **Incremental product strategy**: By focusing the MVP on individual travelers, the solution minimizes complexity and allows for gradual expansion to collaborative and group-based features.

While competitors tend to prioritize either comprehensive financial management or conversational access, the proposed solution focuses on solving a specific problem exceptionally well: enabling individual travelers to maintain real-time financial control during trips with minimal effort.

2.4 Technological Solution

The proposed system is a conversational travel expense management solution that operates through WhatsApp, enabling users to register and monitor travel expenses with minimal effort. The system supports expense logging via text messages and receipt images, automated categorization, currency conversion, and periodic summaries.

The MVP prioritizes individual travelers, while collaborative/group travel features remain in the product roadmap.

Core Technology Stack

The MVP is built around four main technological pillars:

- **WhatsApp channel** (user interaction layer)
- **GoHighLevel (GHL)** (workflow automation, messaging orchestration, and CRM-layer integration)
- **Supabase** (backend data layer, APIs, authentication support, and database)
- **External AI/services** (OCR and language understanding, when applicable)

System Architecture

The architecture follows a modular design with clear separation of responsibilities across layers.

Interaction Layer (WhatsApp)

Users interact with the system via WhatsApp using lightweight commands and natural language messages (e.g., initiating a trip, logging an expense, requesting a summary). This approach reduces adoption barriers because it does not require users to install or learn a new application.

Orchestration and Automation Layer (GoHighLevel)

GoHighLevel (GHL) is used as the orchestration layer to operationalize the conversational workflow and business processes. In the MVP, GHL supports:

- Handling inbound user interactions and routing them into the correct workflow steps;
- Triggering automations based on message content and user state;
- Managing conversational sequences and system responses;
- Storing and using customer/contact context at the CRM layer when needed;
- Integrating with external services via webhooks (e.g., OCR, currency conversion);
- Enabling operational visibility for the team (e.g., contact records, interaction history).

This choice accelerates MVP iteration by reducing custom infrastructure requirements and enabling rapid experimentation with interaction flows.

Data and Backend Layer (Supabase)

Supabase is used as the primary backend and database infrastructure for the system. It provides:

- A PostgreSQL-based relational database for structured entities such as users, trips, and expenses;
- APIs (REST/GraphQL depending on configuration) to read and write data from automations and services;
- Database functions (RPC) to encapsulate business logic when appropriate (e.g., creating a trip, registering an expense, retrieving summaries);
- Support for authentication and secure access patterns (where applicable to the system's current stage);
- Scalable cloud hosting for persistence and long-term maintainability.

Supabase enables the system to store travel and expense records in a structured format for reporting, later analysis, and future product evolution.

Processing and Intelligence Components

The system may incorporate AI-based processing modules depending on the user input type:

- **Receipt image processing (OCR):** When users submit receipt images, OCR services extract key attributes (amount, date, merchant) to reduce manual entry.
- **Natural language interpretation:** When users submit free-form messages (e.g., “I spent 20 EUR on lunch”), language processing is used to detect amount, currency, category cues, and time references.
- **Currency conversion:** Expenses recorded in foreign currencies are converted to a trip base currency using exchange rate services.

For the MVP, these components are integrated in a pragmatic and modular way, allowing replacement or improvement as the product evolves.

The Supabase relational model supports the core entities required for travel expense tracking, including:

- **User/Contact** (identifier, metadata)
- **Trip** (name, date range, base currency)
- **Expense** (amount, currency, converted value, category, timestamp, source type: text/image)

This structure enables both real-time summaries and later analytics.

6. Security, Privacy, and Compliance

Because the system handles personal financial information, privacy and compliance are treated as core requirements. The MVP design includes:

3 Secure communication via HTTPS for all API calls and webhooks;
4 Controlled storage of user and expense data in Supabase with access rules and auditable logs;
5 Explicit consent mechanisms aligned with LGPD principles, particularly for storing personal and receipt data;
6 The ability to evolve toward stronger controls (e.g., row-level security policies, tokenized access) as the product scales.

6.1.1 Requirements and Specifications:

This section presents the functional and non-functional requirements of the system, as well as the user specifications and primary use cases. The requirements were defined based on the project objectives, user research, and the scope effectively implemented in the MVP.

1. Functional Requirements

Functional requirements describe the system behaviors and capabilities that directly support user interactions and business logic.

FR1 – User Interaction via WhatsApp
The system shall allow users to interact exclusively through WhatsApp, without requiring the installation of additional applications.

FR2 – Trip Creation and Management
The system shall allow users to create and manage individual trips, including defining trip name, date range.

FR3 – Expense Registration via Text
The system shall allow users to register expenses by sending text messages describing the amount and context of the expense.

FR4 – Expense Registration via Image (OCR)
The system shall allow users to register expenses by sending images of receipts, which are processed using OCR to extract financial data.

FR5 – Expense Categorization
The system shall categorize expenses into predefined categories (e.g., food, transportation, accommodation).

FR6 – Expense Storage and Persistence
The system shall store all trips and expenses in a structured database to allow retrieval, aggregation, and reporting.

FR7 – Financial Summaries and Reports
The system shall provide users with periodic summaries of expenses, including total spending and category breakdowns.

FR8 – Confirmation and Feedback Messages
The system shall confirm successful operations (e.g., expense registered) and provide feedback in case of missing or ambiguous information.

FR9 – Data Retrieval on Demand
The system shall allow users to request summaries or expense overviews at any time via WhatsApp commands.

2. Non-Functional Requirements

Non-functional requirements define quality attributes and constraints of the system.

NFR1 – Usability
The system shall prioritize simplicity and minimal cognitive load, allowing users to register expenses with minimal effort.

NFR2 – Availability
The system shall be available continuously, subject to WhatsApp API and cloud infrastructure availability.

NFR3 – Performance
The system shall process user messages and return responses within an acceptable time frame to maintain conversational flow.

NFR4 – Scalability
The system shall support growth in the number of users and messages without requiring architectural redesign.

NFR5 – Security
The system shall ensure secure communication between components and protect user financial data from unauthorized access.

NFR6 – Privacy and Compliance
The system shall comply with data protection regulations (e.g., LGPD), ensuring informed user consent and responsible data handling.

NFR7 – Maintainability
The system shall be modular and well-structured to facilitate maintenance and future feature development.

NFR8 – Reliability
The system shall ensure data consistency and avoid loss of expense records during processing or storage.

User Specifications and Use Cases

3. User Specifications

The system is designed for users with the following characteristics:

- Individual travelers aged approximately 25 to 45 years;
- Users who travel for leisure or work at least once per year;
- Frequent WhatsApp users, including for practical and financial matters;
- Limited willingness to use complex or standalone financial applications;
- Need for real-time visibility and control of travel expenses.

The system assumes basic familiarity with WhatsApp messaging and does not require technical expertise.

4. Primary Use Cases

The main use cases implemented in the MVP are described below.

Use Case 1 – Create a Trip

Actor: User
Description: The user creates a new trip by providing basic information.
Flow:

1. User initiates the command to create a trip.
2. System requests trip name, dates, and base currency.
3. System confirms trip creation.

Outcome: A new trip is stored and becomes active for expense tracking.

Use Case 2 – Register Expense via Text

Actor: User
Description: The user registers an expense using a text message.
Flow:

1. User sends a message describing the expense.
2. System interprets amount, currency, and category cues.
3. System converts currency if needed and stores the expense.
4. System confirms successful registration.

Outcome: Expense is recorded and included in summaries.

Use Case 3 – Register Expense via Receipt Image

Actor: User
Description: The user sends an image of a receipt to register an expense.
Flow:

1. User sends receipt image.
2. System applies OCR to extract financial data.
3. System requests confirmation if necessary.
4. System stores the expense and confirms registration.

Outcome: Expense is automatically recorded with minimal manual input.

Use Case 4 – View Expense Summary

Actor: User
Description: The user requests a summary of expenses.
Flow:

1. User sends a summary command.
2. System retrieves expense data from the database.
3. System returns a summarized view of spending.

Outcome: User gains real-time visibility of travel expenses.

6.1.2 Architecture and Technology:

The system adopts a cloud-based client–server architecture with service-oriented components, designed to support a conversational user experience through WhatsApp while keeping the backend modular and scalable. The MVP focuses on individual travelers, and the architecture was defined to enable future expansion (e.g., group travel, Open Finance integrations) without major redesign.

1. Architectural Style and Classification

From a software architecture perspective, the solution can be classified as:

- **Client–Server Architecture:**
  WhatsApp acts as the client interface, while the server-side components (automation, middleware, database, and processing services) handle business logic and persistence.
- **Cloud Architecture:**
  Core components are hosted in the cloud using managed platforms and external APIs, providing availability and scalability with reduced infrastructure management overhead.
- **Service-Oriented / Modular Architecture:**
  System capabilities are distributed across specialized services (messaging provider, orchestration, middleware, database, OCR, currency exchange, AI). Each component has a clear responsibility and interacts through APIs and webhooks.

The MVP is not implemented as a full microservices architecture, since it leverages managed services and a centralized integration middleware.

However, the modular design supports gradual evolution toward finer-grained services if scaling or complexity requires it.

2. Main Architectural Components

2.1 Client Layer (User Interface)

- **WhatsApp** is the single interaction channel. Users register expenses and request summaries through commands and natural language messages.

2.2 Messaging Provider Layer

- **stevo.chat** provides WhatsApp Business API connectivity, handling inbound/outbound messages and webhook delivery.

2.3 Orchestration Layer

- **GoHighLevel (GHL)** manages conversational flows and automation logic:
  - message routing and workflow triggers
  - interaction sequencing and user context handling
  - webhook calls to backend services

2.4 Integration/Middleware Layer

- A **hosted PHP middleware** acts as the integration hub between GHL and Supabase, and between GHL and external processing services. Its responsibilities include:
  - validating and normalizing payloads (values, currencies, dates)
  - calling Supabase APIs (REST/RPC)
  - invoking external services (OCR, currency conversion, AI)
  - logging, error handling, and retries

2.5 Data Layer

- **Supabase** provides the backend data infrastructure:
  - PostgreSQL relational database for users, trips, and expenses
  - APIs for reading/writing structured records

- optional RPC functions for encapsulated business rules

2.6 External Processing Services

- **OCR service** for receipt image data extraction
- **AI/chat API** for natural language interpretation (when applicable)

3. End-to-End Data Flow (High Level)

1. The user sends a message or receipt image via **WhatsApp**.
2. **stevo.chat** receives the event and forwards it via webhook/integration.
3. **GHL** triggers the appropriate workflow based on user input and state.
4. **PHP middleware** processes the request:
   - validates and standardizes inputs
   - calls external services (OCR/AI/exchange rates) if needed
   - writes results to **Supabase**
5. The system returns confirmation and summaries back to the user via **GHL → stevo.chat → WhatsApp**.

4. Rationale for Architectural Decisions

7 **Low-friction adoption:** WhatsApp eliminates installation and onboarding barriers.
8 **Rapid MVP iteration:** GHL accelerates workflow development and testing.
9 **Modularity and maintainability:** the PHP middleware decouples orchestration from persistence and external services.
10 **Scalability and persistence:** Supabase provides reliable structured storage and scalable APIs.
11 **Extensibility:** external services (OCR, FX, AI) are integrated via APIs, allowing replacement or enhancement with minimal impact.

11.1.1 Development and Implementation (MVP):

Development Methodology

The development of the project followed the Scrum framework, using iterative and incremental sprints to structure the evolution of the solution from problem discovery to the implementation of the Minimum Viable Product (MVP).

Scrum was selected due to its suitability for projects with high uncertainty and evolving requirements, allowing continuous validation of assumptions, frequent deliveries, and incremental refinement of both technical and business aspects of the solution.

Each sprint had a clearly defined objective, scope, and expected deliverables. The sprint structure ensured alignment between user needs, technical feasibility, and the overall product vision.

Sprint Planning and Execution

The project was organized into ten planned sprints, covering the full lifecycle from market research to advanced features.
However, in line with MVP principles, only the sprints required to validate the core value proposition were fully implemented, while later sprints were defined as part of the product roadmap.

Sprint Breakdown

Sprint 1 – Market Research and Benchmarking

Objective:
To understand the market landscape, identify existing solutions, and map user pain points and opportunities.

Main Activities:

- Market immersion and competitor analysis
- User pain point identification
- SWOT analysis
- Initial project planning

Deliverables:

- Benchmarking of similar solutions
- Consolidated list of user pain points and needs
- SWOT matrix
- Initial project plan

Sprint 2 – Target Audience, Value Proposition, and Project Structure

Objective:
To define the target audience, personas, value proposition, and overall project structure.

Main Activities:

- Definition of target audience
- Persona creation
- Identification of priority use cases
- Development of the Value Model Canvas

Deliverables:

- Documentation of 2–3 detailed personas
- List of priority use cases
- Completed Value Model Canvas

Sprint 3 – Functionalities and Requirements

Objective:
To translate ideas into structured system requirements and prioritize MVP features.

Main Activities:

- Identification of system functionalities
- Classification of MVP features and future backlog
- Definition of functional and non-functional requirements

Deliverables:

- Feature list divided into MVP and future backlog

- Functional and non-functional requirements document
- MoSCoW prioritization matrix

Sprint 4 – Architecture and Interaction Flows

Objective:
To design the technical architecture and define the user interaction flows.

Main Activities:

- System architecture design
- Definition of interaction flows via WhatsApp

Deliverables:

- Technical architecture document
- WhatsApp interaction flow diagram

Sprint 5 – Navigable Prototype and Validation

Objective:
To validate the user experience through a navigable prototype.

Main Activities:

- Development of a Figma-based navigable prototype
- User feedback collection
- Backlog refinement

Deliverables:

- Navigable prototype simulating core flows
- Updated backlog
- Initial business plan

Sprint 6 – WhatsApp Integration and Text-Based Expense Registration

Objective:

To implement the core expense registration flow via WhatsApp text messages.

Main Activities:

- WhatsApp integration
- Implementation of text-based expense registration
- Database persistence

Deliverables:

- Functional flow for registering expenses via text messages
- Database storing expense data (amount, category, date)

Sprint 7 – Image-Based Expense Registration (OCR)

Objective:

To automate expense registration through receipt images.

Main Activities:

- OCR integration
- Image processing workflow
- Data extraction and validation

Deliverables:

- OCR service integration
- Automated flow to extract amount, date, and category from images

Sprint 8 – Automatic Currency Conversion

Objective:

To support expenses recorded in foreign currencies.

Main Activities:

- Integration with a real-time currency exchange API

- Definition of base currency per trip

Deliverables:

- Automatic currency conversion feature
- Configuration of default currency for each trip

Sprint 9 – Market Analysis and Business Validation

Objective:
To consolidate the business and market analysis in preparation for the academic evaluation and project presentation.

Deliverables:

- Definition and refinement of **TAM, SAM, and SOM** estimates.
- Alignment between market sizing, pricing strategy, and financial projections.
- Validation of market assumptions and business hypotheses.
- Documentation prepared for academic review and presentation.

Status:
Completed. This sprint focused on **strategic and analytical deliverables**, rather than new technical implementations, and played a key role in validating the business feasibility of the project.

Sprint 10 – Project Refinement and Final Documentation

Objective:
To refine the project based on feedback and ensure coherence across all technical, business, and academic components.

Deliverables:

- Revision and consolidation of all project documentation.
- Consistency checks between MVP scope, architecture, and business model.
- Refinement of financial assumptions and KPIs.
- Final preparation of the project for submission and presentation.

Status:
Completed. This sprint ensured that the project achieved a high level of clarity, coherence, and academic rigor.

MVP Scope Summary

The **Minimum Viable Product** includes the deliverables from **Sprints 1 to 10**, which collectively validate the central hypothesis of the project:
that individual travelers are willing to manage travel expenses through a conversational interface on WhatsApp.

Advanced features such as group expense splitting and report exports were intentionally postponed and included in the roadmap to ensure technical feasibility, faster delivery, and alignment with MVP best practices.

11.1.2 Testing and Technical Evaluation:

This section describes the testing strategies adopted during the development of the Minimum Viable Product (MVP) and presents the results obtained, demonstrating the functional correctness and technical robustness of the system.

Given the MVP-oriented nature of the project and the use of managed platforms, testing focused on validating core functionalities, system integrations, and end-to-end user flows, rather than exhaustive low-level automated testing.

Integration Testing

Objective:
To verify correct communication and data flow between system components.

Scope:
Integration testing focused on validating interactions between:

- WhatsApp (via stevo.chat) and GoHighLevel;
- GoHighLevel and the PHP middleware;

- PHP middleware and Supabase;
- PHP middleware and external APIs (OCR and currency conversion).

Test Scenarios:

- End-to-end expense registration via text message;
- End-to-end expense registration via receipt image (OCR);
- Currency conversion for foreign expenses;
- Data persistence and retrieval from Supabase;
- Error propagation and fallback behavior when external services fail.

Results:
Integration tests demonstrated that messages sent via WhatsApp were correctly processed through all system layers and resulted in consistent data storage and feedback messages. Data integrity was maintained across services, and temporary failures in external APIs did not compromise stored records.

Acceptance Testing

Objective:
To validate that the system meets user expectations and functional requirements.

Scope:
Acceptance testing was conducted using **realistic user scenarios**, based on the defined use cases and personas.

Validated Use Cases:

- Creation of an individual trip;
- Registration of expenses via text;
- Registration of expenses via receipt image;
- Automatic currency conversion;
- Retrieval of expense summaries.

Method:
Manual acceptance tests were performed by simulating user interactions through WhatsApp, verifying system responses, confirmations, and summaries.

Results:

The system successfully met all acceptance criteria defined for the MVP. Users were able to complete core tasks with minimal effort, and system feedback was clear and consistent. The conversational interface proved effective in reducing friction compared to traditional expense tracking tools.

11.2 The Business Plan

MIA is a conversational fintech solution designed to simplify personal expense management during travel. The product operates entirely through WhatsApp, allowing users to record expenses using natural language messages and images of receipts, without the need to install additional applications.

The solution targets travelers who struggle with manual expense tracking, currency conversion, and post-trip financial organization. By leveraging widely adopted messaging platforms and artificial intelligence, MIA significantly reduces friction in financial control during travel.

Value Proposition

MIA offers a **low-friction, chat-based alternative** to traditional personal finance applications by:

- Allowing expense registration via text and receipt images;
- Automatically categorizing expenses using AI;
- Converting foreign currencies into a base currency;
- Providing real-time summaries directly in WhatsApp.

The main value lies in **simplicity, accessibility, and immediacy**, especially for users who abandon traditional finance apps due to complexity.

Target Market

The initial market focus is **Brazil**, with future expansion to Latin America.

Primary target users:

- Individual travelers (leisure or work);
- Users aged 20–45;
- Frequent WhatsApp users;
- Users who currently track expenses manually, via spreadsheets, notes, or bank statements.

Group travel features are planned for future versions but were **not included in the MVP**, ensuring scope alignment.

Revenue Model

MIA adopts a **Freemium SaaS model**, composed of:

- **Free Tier**: basic expense registration and summaries;
- **Premium Subscription**: advanced reports, export features, historical analytics, and extended usage limits.

Planned pricing (Premium):

- R$ 19.90 per month
  or
- R$ 199 per year (discounted)

Expected freemium-to-paid conversion: **15–25%**, consistent with similar fintech and chatbot products.

Cost Structure

Fixed Monthly Costs (MVP Phase)

Component	Monthly Cost (R$)	Description

GoHighLevel (GHL Starter)	543	Automation platform and webhook orchestration
Supabase (Database & Storage)	224	User, travel, and expense data storage
Stevo.chat	33	Conversational orchestration layer
Hosting / Middleware (PHP)	100	Server for integration between GHL and Supabase
Tools & Infrastructure	50	Monitoring, logs, and auxiliary services
Labor Cost (MVP)	4,800	One part-time contributors (technical + product)

Total Fixed Monthly Cost: ~R$ 5,750

Variable Costs (Per User / Month)

Component	Cost per User (R$)	Description
OpenAI API (NLP + OCR processing)	~0.06	Expense interpretation and categorization
Supabase usage	~0.01	Marginal storage and read/write operations

Average Variable Cost per User: ~R$ 0.07 / month

Payment Processing Fees

Payment processing fees were estimated based on common Brazilian gateways (e.g., Stripe, Mercado Pago):

- 3.99% + R$ 0.39 per transaction

For a monthly subscription of R$ 19.90, this results in an average fee of:

- ~R$ 1.20 per paying user / month

Unit Economics

Average Revenue per Paying User (ARPU)

- Monthly ARPU: **R$ 19.90**
- Gross margin per paying user:
    - Revenue: R$ 19.90
    - Payment processing fees: R$ 1.20
    - Variable cost: ~R$ 0.07
    - **Gross contribution margin:** ~R$ 18.63 (≈93.6%)

This margin is considered healthy for a conversational SaaS at early scale.

Financial Projections (Conservative Scenario)

Assumptions:

- MVP phase: Years 1–2;
- Conversion to paid users: 20%;
- Average usage remains stable;
- Organic growth and low CAC via WhatsApp virality.

Projection Table

Year	Total Users	Paying Users (20%)	Revenue (R$)	Fixed Costs (R$)	Variable Costs (R$)	Total Costs (R$)	Net Result (R$)
Year 1	2,000	400	79,600	69,000	3,668	72,668	**+6,932**
Year 2	6,000	1,200	238,800	69,000	11,004	80,004	**+158,796**

Break-even point: between **Month 18 and 22**, consistent with MVP-stage fintech products.

8. Scalability and Growth Strategy

Scalability is achieved through:

- Fixed-cost amortization (GHL, Stevo, infrastructure);
- Marginal cost growth tied mainly to WhatsApp messaging;
- Expansion to LATAM markets using the same architecture;
- Future B2B and group travel features.

Planned future revenue streams include:

- Corporate travel expense management;
- Partnerships with travel platforms and fintechs;
- White-label licensing.

9. Risks and Mitigation

Risk	Mitigation
Dependence on WhatsApp API	Modular architecture; alternative channels in roadmap

Data privacy concerns	LGPD-compliant storage and explicit user consent
Competition from traditional apps	Focus on conversational UX and zero-install friction

11.2.1 Market and Competitor Analysis:

The market addressed by **MIA** is composed of travelers who need a simple and practical way to manage personal expenses during trips, without relying on complex financial applications. The segmentation was defined based on behavioral, demographic, and technological criteria.

Target Market Segmentation

- **Geographic**: Brazil (initial market), with potential expansion to Latin America.
- **Demographic**:
  - Age: 20 to 45 years old
  - Income: Middle to upper-middle income
  - Education: Secondary or higher education
- **Behavioral**:
  - Travels at least once per year (leisure or work)
  - Uses WhatsApp daily
  - Currently tracks expenses manually (notes, spreadsheets, bank statements) or inconsistently
- **Technological**:
  - High familiarity with messaging apps
  - Low tolerance for complex or time-consuming applications

At the MVP stage, group travelers were excluded from the target scope due to implementation constraints. The product focuses exclusively on individual travelers, ensuring coherence between scope, delivery, and evaluation.

Persona Description

Persona: Lucas, 29 years old – Marketing Analyst

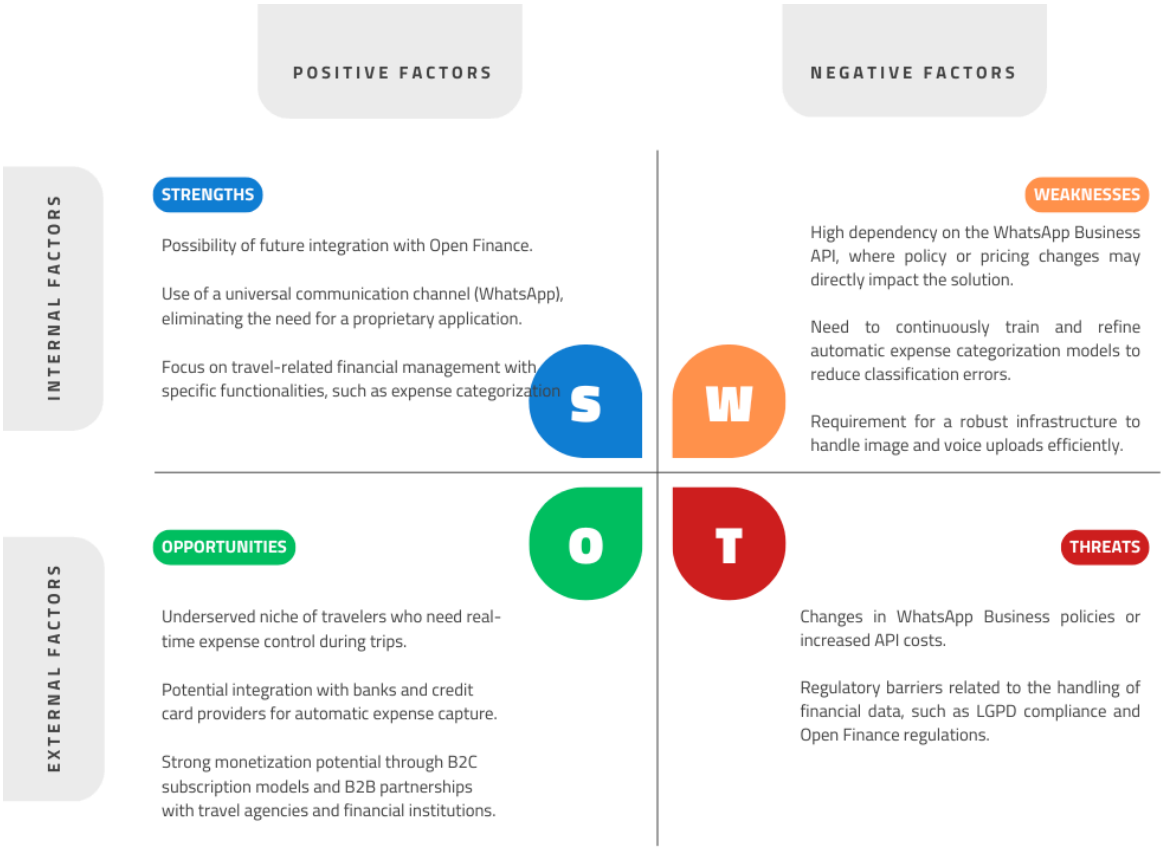
- Travels 2–4 times per year, including international trips.
- Uses spreadsheets or bank statements after the trip to understand expenses.
- Often forgets to register expenses during the trip.
- Feels frustrated with complex finance apps that require too many steps.
- Values speed, simplicity, and tools that fit naturally into his daily routine.

Main pain point: Lack of a practical and real-time method to record expenses during travel.
Need: A lightweight, accessible solution integrated into a familiar platform (WhatsApp).

MIA addresses this need by allowing expense registration through short messages or receipt images, reducing cognitive and operational effort.

SWOT Analysis

A SWOT analysis was conducted to evaluate the internal and external factors that affect the viability and competitiveness of the solution.



Competitor Analysis and Product Differentials

The competitive landscape includes both direct and indirect competitors.

Direct Competitors

- Financinha – WhatsApp-based expense tracking bot, focused on general personal finance.
- GranaZen – AI assistant on WhatsApp for expense registration and summaries.

Indirect Competitors

- GuiaBolso, Mobills, Organizze – Traditional personal finance apps requiring installation and manual interaction.
- YNAB, PocketGuard – Advanced budgeting tools, mainly focused on long-term financial planning rather than travel.

Comparative Analysis

Criteria	MIA	Financinha	Grana Zen	Traditional Finance Apps
WhatsApp-native	Yes	Yes	Yes	No
Travel-focused	Yes	No	No	No
OCR for receipts	Yes	Limited	Limited	Rare
App installation required	No	No	No	Yes
MVP scope (individual travel)	Yes	Yes	Yes	Yes

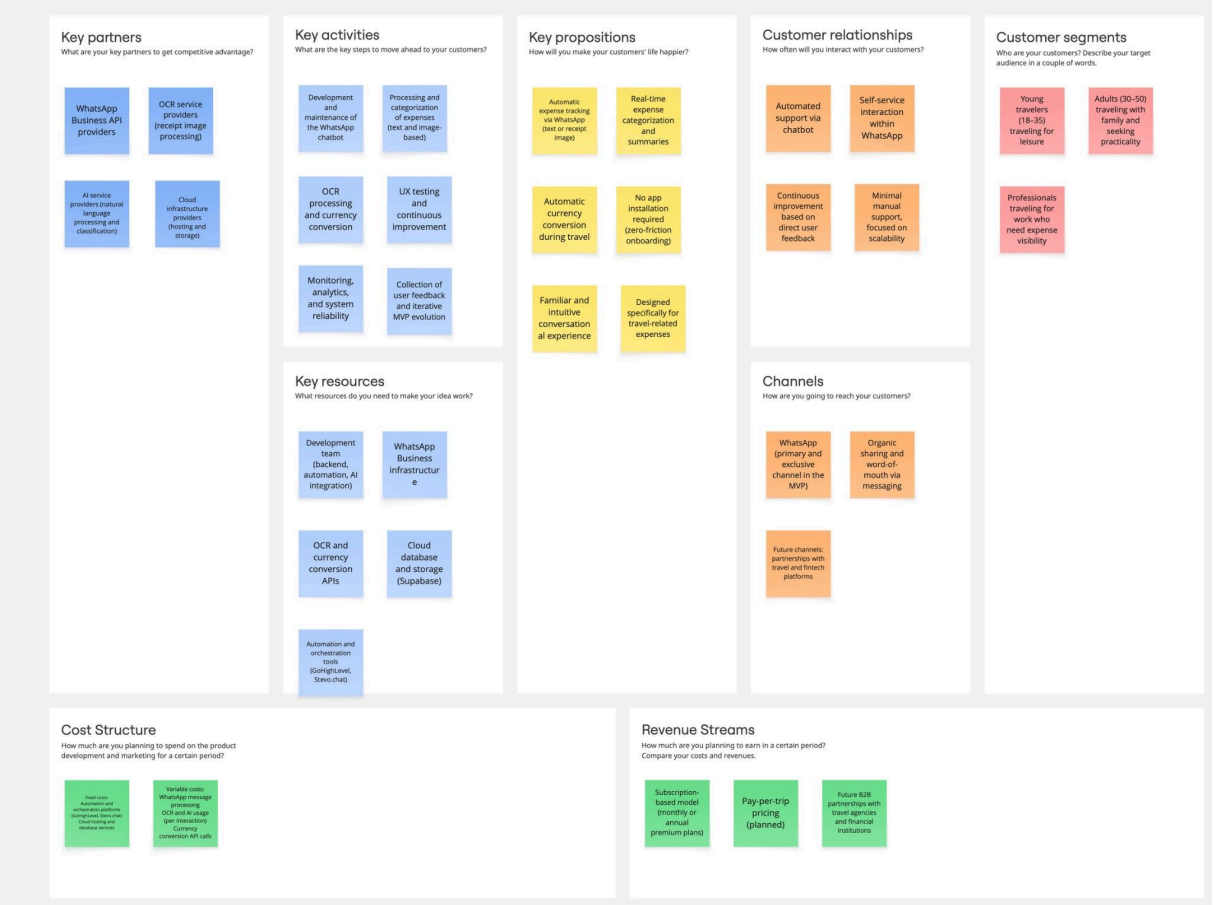
Competitive Advantage and Differentiation

MIA's main competitive advantage lies in its clear niche focus on travel expenses, combined with a conversational and frictionless user experience. While competitors offer generic expense tracking, MIA is designed specifically for travel-related contexts, such as foreign currency conversion and real-time expense capture during trips.

Additionally, by operating entirely within WhatsApp, MIA eliminates common barriers to adoption such as app installation, onboarding complexity, and user abandonment, a frequent issue in traditional personal finance applications.

11.2.2 Business Model (Business Model Canvas - BMC):

This section presents the Business Model Canvas (BMC) for **MIA**, detailing each of its building blocks. The model reflects both the current MVP implementation and the planned evolution of the solution, ensuring coherence between technical feasibility and business strategy.



1. Key Partners

MIA relies on strategic technology partners that enable its conversational and automated nature:

- **WhatsApp Business API providers**, responsible for message delivery and conversational access.
- **OCR service providers**, used to extract structured data from receipt images.
- **Currency exchange APIs**, which provide real-time conversion of foreign currencies.
- **Cloud infrastructure providers**, supporting hosting, storage, and scalability.
- **AI service providers**, enabling natural language processing and expense categorization.

These partnerships are essential to ensure reliability, scalability, and continuous service availability.

2. Key Activities

The core activities required to deliver MIA's value proposition include:

- Development and maintenance of the WhatsApp chatbot.
- Processing of text and image-based expense inputs.
- Optical Character Recognition (OCR) and data extraction from receipts.
- Automatic currency conversion and expense categorization.
- Usability testing and continuous UX improvements.
- System monitoring, performance optimization, and data integrity.
- Collection of user feedback to guide iterative MVP evolution.

3. Key Resources

The main resources that support MIA's operations are:

- A multidisciplinary development team (backend, automation, and AI integration).
- WhatsApp Business infrastructure for user interaction.
- OCR and currency conversion APIs.
- Cloud database and storage services (Supabase).
- Automation and orchestration platforms (GoHighLevel and Stevo.chat).

These resources enable rapid development, scalability, and operational efficiency.

4. Value Propositions

MIA delivers value to its users through:

- **Automatic expense tracking** via WhatsApp using text or receipt images.
- **Real-time expense categorization** and financial summaries.
- **Automatic currency conversion**, reducing friction in international travel.
- **Zero-install experience**, eliminating the need for a dedicated application.
- **Familiar and intuitive interface**, embedded in a widely used messaging platform.
- **Travel-focused design**, tailored to the context of personal travel expenses.

The MVP focuses on individual travelers, while group expense management is planned for future versions.

5. Customer Relationships

Customer relationships are primarily managed through automation:

- Self-service interaction via the chatbot.
- Automated responses and confirmations.
- Continuous product improvement based on direct user feedback.
- Minimal manual support, enabling scalability at low operational cost.

This approach ensures consistent user experience while maintaining operational efficiency.

6. Channels

MIA reaches and serves its customers through:

- **WhatsApp**, which serves as the primary and exclusive channel in the MVP.
- Organic growth via word-of-mouth and message sharing.
- Future expansion through partnerships with travel platforms and fintech services.

7. Customer Segments

The solution targets individuals who travel and seek simplicity in financial management:

- Young travelers (18–35) traveling for leisure.
- Adults (30–50) traveling with family and prioritizing convenience.
- Professionals traveling for work who need consolidated expense tracking.

All segments share a strong preference for speed, simplicity, and familiar digital environments.

8. Cost Structure

MIA's cost structure combines fixed and variable costs:

- **Fixed costs**:
  - Automation and orchestration platforms (GoHighLevel, Stevo.chat).
  - Cloud hosting and database services.
- **Variable costs**:
  - WhatsApp message processing.
  - OCR and AI processing per interaction.
  - Currency exchange API usage.

The predominantly usage-based cost model allows efficient scaling as the user base grows.

9. Revenue Streams

The primary revenue streams of MIA include:

- Subscription-based premium plans (monthly or annual).
- Pay-per-trip pricing models (planned).
- Future B2B partnerships with travel agencies and financial institutions.

This diversified revenue approach supports long-term sustainability and scalability.

11.2.3 Marketing and Sales Strategy:

The go-to-market strategy for **MIA** is designed to minimize customer acquisition costs while leveraging the product's main differentiator: **its native integration with WhatsApp**. Instead of competing in traditional app stores, the product is launched directly through a channel already used daily by the target audience.

Launch Strategy

The initial launch follows a **lean and incremental approach**, structured in three phases:

Phase 1 – MVP Validation (Soft Launch)

- Controlled release to a limited group of users.
- Recruitment through personal networks, travel communities, and early adopters.
- Objective: validate usability, stability, and perceived value.
- Collection of qualitative feedback to refine user experience and messaging.

Phase 2 – Public Launch (Organic Growth)

- Public availability via a direct WhatsApp entry point (link or QR code).
- Emphasis on simplicity: “Start tracking your travel expenses on WhatsApp in minutes.”
- Use of landing pages explaining the value proposition and usage examples.
- Focus on content marketing related to travel budgeting and financial organization.

Phase 3 – Expansion and Partnerships

- Strategic partnerships with travel influencers, blogs, and digital travel communities.
- Integration with fintech and travel platforms to reach users at the moment of travel planning.
- Preparation for regional expansion after initial traction in the Brazilian market.

Customer Acquisition Strategy

Customer acquisition prioritizes **low-cost, high-conversion channels**, consistent with an early-stage SaaS product.

Primary Acquisition Channels

- **WhatsApp viral loops**: users naturally interact and share the service within the same platform.

- **Social media marketing**: targeted campaigns on Instagram and TikTok focused on travelers.
- **Content marketing**: educational content on travel expense control and budgeting.
- **Influencer partnerships**: collaboration with micro-influencers in the travel niche.
- **SEO and landing pages**: capturing search intent related to travel budgeting and expense tracking.

Customer Acquisition Objectives

- Reduce friction by eliminating app installation.
- Achieve rapid onboarding through conversational interaction.
- Maintain a low Customer Acquisition Cost (CAC) aligned with the freemium model.

Customer Retention Strategy

Retention is critical for subscription-based models and is addressed through **habit formation and perceived ongoing value**.

Retention Mechanisms

- **Daily or periodic expense summaries** delivered via WhatsApp.
- **Automatic categorization and currency conversion**, reinforcing the product's usefulness.
- **Usage reminders** triggered during active trips.
- **Feature gating** between free and premium plans to encourage upgrades.
- **Continuous improvement** based on user behavior and feedback.

Long-Term Retention

- Introduction of historical insights and travel comparisons for premium users.
- Gradual addition of advanced features (e.g., group expenses, integrations) without disrupting the core experience.
- Transparent communication regarding data privacy and reliability to build trust.

Sales Strategy

MIA adopts a **self-service sales model**, optimized for scalability.

- Conversion from free to premium occurs directly within the WhatsApp experience.
- Clear and simple pricing communicated during moments of perceived value.
- No dedicated sales team required at the MVP stage.
- Future B2B sales will involve partnership-based negotiations rather than direct sales efforts.

11.2.4 Financial Projection and Feasibility:

MIA adopts a **freemium SaaS model**, designed to reduce adoption barriers while enabling monetization through premium features.

Pricing Structure

- **Free Plan**:
  - Basic expense registration via WhatsApp
  - Limited summaries and usage
- **Premium Plan**:
  - Advanced summaries and historical insights
  - Export of data (CSV/PDF)
  - Higher usage limits
  - Priority processing

Price:

- R$ 19.90 per month
- R$ 199.00 per year (discounted option)

This pricing is consistent with comparable fintech and productivity tools in the Brazilian market and aligns with the perceived value of continuous expense tracking during travel.

Cost Structure Overview

MIA's cost structure combines fixed operational costs with variable usage-based costs.

Fixed Monthly Costs

- GoHighLevel (automation and webhooks): ~R$ 543
- Supabase (database and storage): ~R$ 224
- Stevo.chat (chat orchestration): R$ 33
- Hosting and middleware: ~R$ 100
- Auxiliary tools and infrastructure: ~R$ 50
- Labor cost (1 part-time contributor): ~R$4,800

Total fixed monthly cost: ~R$ 5,750

Variable Costs (per active user / month)

- AI processing (NLP + OCR): ~R$ 0.06
- Database usage: ~R$ 0.01
- Payment processing fees: ~R$1.20

Average variable cost per user: ~R$ 1.27

Unit Economics

- **ARPU (Premium User):** R$ 19.90 / month
- **Contribution Margin per User:**
- Revenue: R$ 19.90
- Variable costs: R$ 1.27
- Contribution Margin per User:
  R$ 18.63 per month
- Contribution Margin (%)
  - ~93.6%

Break-Even Estimation

To cover fixed monthly costs (~R$ 5,750), the platform requires approximately:

~309 paying users

This break-even threshold is achievable within **18–22 months**, considering organic growth and conservative conversion rates.

Financial Viability

- Positive contribution margin per user
- Low fixed costs due to automation
- Scalable cost structure aligned with usage

These factors indicate strong financial feasibility for early-stage deployment.

Initial Investment Requirement

The initial investment required focuses on sustaining MVP operations, infrastructure, and iterative improvements.

Estimated Initial Investment (12 months)

- Operational costs (infrastructure and APIs): ~R$ 12,000
- Development and maintenance effort (opportunity cost): ~R$ 18,000
- Marketing and validation activities: ~R$ 5,000

Total estimated initial investment: ~R$ 35,000

This investment level is consistent with early-stage digital startups and academic MVP projects.

11.3 Validation and Results

The validation of MIA was conducted through **qualitative and exploratory methods**, ensuring that the project went beyond theoretical assumptions.

11.3.1 Validation Methodology:

- **Customer interviews and questionnaires** with travelers
- **Problem-solution validation**, focusing on expense tracking habits
- **Prototype validation** using a navigable Figma prototype
- **MVP testing** with real message-based interactions via WhatsApp

The validation focused on identifying real pain points and testing user acceptance of a conversational interface.

11.3.2 Market Validation Results:

Key Findings

- Users reported **frequent difficulty remembering to record expenses** during trips.
- Manual methods (spreadsheets, notes) were perceived as inconvenient.
- The WhatsApp-based approach was considered **intuitive and familiar**.
- OCR-based receipt capture was identified as a high-value feature.

Engagement Indicators

- High completion rate in prototype flows
- Positive feedback regarding ease of use
- Strong interest in automated summaries and currency conversion

These results validate the core hypothesis that travelers value **low-friction, chat-based financial control**.

- **Pivoting or Persisting:**

- The decision was made to persist with the individual traveler focus in the MVP.
- Group expense management was postponed to future iterations due to technical complexity.
- UX flows were simplified to reduce cognitive load.
- Messaging prompts were refined to improve clarity and accuracy.

11.3.3 Key Performance Indicators (KPIs):

- Presentation of key performance metrics (e.g. , *CAC* - Customer Acquisition Cost, *LTV* - Lifetime Value) . Value , *Churn Rate*).

11.3.4 Risks and Mitigation Plan:

Risk Type	Description	Mitigation Strategy
Financial	Rising API or messaging costs	Optimize message templates and usage limits
Technological	Dependency on WhatsApp API	Modular architecture and future channel expansion
Legal	Data protection and LGPD compliance	Explicit user consent and secure data storage
Competitive	Entry of large fintech players	Focus on niche differentiation and UX simplicity

12 Conclusion

This project achieved its primary objective of designing and validating a conversational financial management platform for travel expenses using WhatsApp as the main user interface. The proposed solution successfully demonstrates that it is possible to simplify expense tracking by leveraging natural language interactions, automated categorization, and a widely adopted communication channel, thereby reducing friction commonly associated with traditional financial management applications.

Throughout the development of the MVP, the system proved capable of registering expenses through text, audio, and image inputs, organizing financial data in a structured manner, and generating summarized insights on demand. From a technical and operational perspective, the architecture showed scalability potential, with low variable costs and a high contribution margin, even when conservative assumptions were applied. The inclusion of infrastructure, labor, and payment processing costs resulted in realistic and sustainable unit economics, reinforcing the feasibility of the business model.

Financial projections indicate that the platform can reach break-even with a relatively small number of paying users and scale efficiently as the user base grows. This highlights the viability of the venture in early-stage scenarios, especially considering the low customer acquisition cost enabled by WhatsApp-based virality and organic growth dynamics.

As future work, the platform may evolve to include advanced analytics, shared expense management for groups, integrations with external financial tools, and predictive insights based on historical travel data. Additionally, the adoption of annual subscription plans, partnerships with travel-related services, and international expansion could further improve revenue predictability and user lifetime value.

In conclusion, the results obtained confirm that the proposed objectives were met, both from a technical and business standpoint. The project demonstrates strong potential as a scalable SaaS solution, contributing not only as an academic exercise

but also as a foundation for a real-world digital product capable of addressing a relevant and practical problem in personal finance management.

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