



Initial Proposal Template

Project Title: Yeast AI - Smart Financial Companion for Local Micro-Bakeries

Track Selection

- Generative AI Track – Empowering Business Growth & Financial Independence

Participant Information

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Project Overview

1. Problem Statement

Local micro-bakery owners in the Philippines encounter significant barriers to growth and long-term sustainability, primarily due to challenges in financial management, particularly in cash flow management, and effective loan utilization.

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Cash Flow Management: Effective cash flow management is essential for the operational stability of micro-bakeries. Many owners lack the necessary tools and financial literacy to monitor their cash flow effectively, which is exacerbated in rural areas where digital skills are limited. This lack of financial literacy can lead to cash shortages, operational disruptions, and difficulties in meeting financial obligations, including loan repayments (Rupasingha et al., 2019). Research indicates that access to financial resources is crucial for small business growth, and inadequate cash flow management can significantly impede this growth (Watson, 2021). Furthermore, the inability to track cash flow can prevent bakery owners from identifying opportunities for investment and expansion, ultimately jeopardizing their business sustainability (Römer et al., 2018).

Loan Utilization: The effective utilization of loans is another critical area where micro-bakeries struggle. Many owners are unaware of their eligibility for various loan products or lack guidance on how to allocate borrowed funds effectively. This mismanagement can result in underutilization of loans, as funds may be directed toward non-essential expenditures rather than addressing immediate operational needs (Bordo & Duca, 2018). The complexities of loan application processes and repayment terms can deter bakery owners from seeking financial support, further limiting their growth potential (Suratini & Parera, 2020). Studies have shown that educational campaigns aimed at improving financial literacy can enhance loan approval rates and empower small business owners to make informed financial decisions (Hiramatsu & Marshall, 2018).

These challenges are heightened by the unique nature of their business, where the perishability of baked goods and fluctuating market dynamics necessitate meticulous cash flow management and strategic loan utilization. The limited shelf life of their products underscores the importance of effective inventory management. As Gaoat (2023) notes, poor inventory practices can strain financial performance, leading to losses from unsold goods and diminished cash flow. Micro-bakeries, dealing with perishable items like bread and pastries, must make swift decisions on discounting or adapting their offerings, especially when ingredient costs fluctuate. Moreover, the sensitivity of baked goods to market demand and seasonal shifts further complicates financial management. Research by Anggadini et al. (2023) emphasizes the need for agility in micro-bakery operations to respond to evolving consumer preferences and seasonal trends, which can significantly impact sales. Adapting to these fluctuations requires astute cash flow management, enabling bakery owners to seize opportunities during peak demand and mitigate losses during slower periods.

The importance of financial literacy among MSME owners cannot be overstated. Studies have shown that many business owners lack the necessary financial knowledge to manage their enterprises effectively, which can lead to poor decision-making and ultimately threaten the sustainability of their businesses (Milenia & Amalia, 2023). Enhancing financial literacy can empower bakery owners to make informed decisions regarding pricing, cost management, and investment in new products, thereby improving their resilience in a volatile market (Hirawati et al., 2021).

This project aims to empower local micro-bakery owners by providing them with tools to improve their financial health and strategic decision-making. Recognizing their vital role as economic contributors and cultural touchstones in their communities, this initiative seeks to address the unique challenges faced by this underserved sector. By focusing specifically on micro-bakeries, the project targets a crucial segment of the market often overlooked in broader business development initiatives, enabling tailored solutions that foster resilience and sustainable growth within local economies.

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Job-to-be-done:

- Monitor and Improve Financial Health
- Utilize Loan Products

2. Solution Description

The proposed solution is an innovative AI-powered chatbot designed specifically for micro-bakeries. This platform aims to empower local bakery owners to effectively manage their finances, plan for business growth, and access tailored loan options. By integrating advanced technology with personalized insights, the solution addresses the unique challenges faced by these dedicated entrepreneurs, helping them thrive within their communities.

CORE FEATURES :

- **Financial Tracking and Reporting**

Bakery sales often experience a peak in the morning or around holidays and weekends. Managing cash flow and expenses around these sales cycles is crucial to achieve financial stability.

The chatbot enables bakery owners to easily input their daily expenses and profits. At the end of each week, the AI generates a **comprehensive financial report** that summarizes *key metrics* and *trends* while providing deep insights into their financial status, helping them keep track of sales fluctuations. Furthermore, it can analyze sales patterns, cash flow and market conditions to make predictions for the upcoming weeks or months. This regular extensive reporting not only keeps bakery owners informed about their financial health but also helps them identify areas for improvement.

The chatbot offers customizable financial reports tailored to the bakery owner's needs. Users can request different types of reports (weekly, monthly, quarterly) and focus on specific metrics (e.g., profit margins, cost of goods sold). This flexibility helps bakery owners to understand their financial status in a way that resonates with their unique business goals.

- **Fluctuating Market and Inventory Management**

Bakeries rely on raw materials like flour, sugar, and eggs, whose prices can fluctuate due to market conditions or seasonality.

Beyond financial tracking, the chatbot offers robust inventory management features. The AI provides **actionable advice on resource allocation** for upcoming days or months. This guidance is tailored to the specific needs of each bakery, ensuring that owners can maintain operational efficiency while planning for growth.

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By analyzing market trends, consumer preferences, and ingredient costs, the chatbot provides bakery owners with predictive insights to optimize inventory management and pricing strategies. It enables them to adjust offerings during peak sales periods and minimize losses during slower seasons, ultimately improving overall profitability.

- **Personalized Profile Assessment**

Before accessing the chatbot, users will complete a detailed profile assessment that gathers essential information about their bakery operations and personal financial goals. This initial step is critical, as it allows the AI to tailor its recommendations and response based on the specific context of each business. The assessment includes factors such as business overview, and the owner's experience in managing finances. The data collected forms the basis for personalized insights that drive the chatbot's functionality.

- **Smart Loan Suggestions**

Utilizing the information obtained from the profile assessment and ongoing financial reports, the chatbot evaluates each bakery owner's loan goals and eligibility. The AI suggests relevant **BPI loan products** that align with the owner's financial situation, ensuring that they have access to appropriate funding options for business growth. The chatbot offers detailed overviews of each loan, including interest rates, repayment terms, and specific eligibility criteria. Additionally, this feature guides owners on how to best utilize loans by providing personalized advice on allocating funds for operational needs, equipment upgrades, or business expansion, ensuring effective loan utilization. This feature simplifies the loan application process, making it more accessible for bakery owners seeking financial support for expansion or operational improvements.

USER - FRIENDLY APPROACH:

The design of the chatbot emphasizes user-friendliness, accommodating varying levels of digital literacy among bakery owners. The intuitive deployment to Facebook Messenger app allows users to navigate the chatbot with ease, whether they are tech-savvy or new to digital tools. The chatbot is structured to facilitate straightforward interactions, ensuring that users can efficiently input data, access reports, and receive guidance without feeling overwhelmed by complexity.

TECHNIQUES :

- **Generative AI**

At the heart of the chatbot is generative AI technology, which analyzes and contextualizes real-time financial data, enriched with insights from local bakery datasets and external factors like market trends and ingredient costs. This technology goes beyond simple data analysis by contextualizing this information to

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identify patterns in expenses and revenues, empowering the AI to generate personalized recommendations tailored to each bakery's unique circumstances. By continuously learning and adapting to the dynamic financial landscape of the bakery, including fluctuations in the cost of goods or shifts in consumer behavior, the AI refines its predictions and suggestions, ensuring that bakery owners receive actionable insights that drive informed decision-making.

- **Data-Driven Decision Making**

The solution promotes data-driven decision-making among bakery owners. By presenting users with accurate financial analyses and actionable insights, the chatbot empowers them to make informed choices regarding their operations. This approach fosters a deeper understanding of financial health, allowing bakery owners to strategize effectively for both short-term and long-term growth.

- **Continuous Support and Engagement**

The chatbot offers continuous engagement with users, providing timely updates and recommendations based on their current financial status. This ongoing interaction helps bakery owners stay focused on their goals and allows them to adapt to changing market conditions. By providing consistent support, the chatbot reinforces best practices in financial management and encourages proactive planning.

This AI-powered chatbot represents a significant advancement for micro-bakery owners, offering a comprehensive suite of tools that streamline financial management and facilitate growth. By combining features such as financial tracking, personalized assessments, and smart loan recommendations, the platform empowers bakery owners to take control of their business finances. Ultimately, this solution supports micro-bakeries in achieving sustainable growth while fostering resilience in an increasingly competitive market.

Implementation Plan

3. Target Audience

The primary users of the chatbot are **local bakery business owners**. These passionate individuals run small, often family-owned bakeries in their communities, striving to deliver quality products and exceptional customer experiences. To achieve their goals, they often exhibit these characteristics:

- **Financially Conscious and Strategic:** They are aware of financial constraints and actively seek methods to manage and optimize their business finances. They are interested in accessing credit or loans for growth and need guidance on eligibility and fund management.

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- **Growth-Oriented:** They are proactive in expanding their businesses through new product introductions, customer outreach, and operational efficiency improvements. They are motivated to implement strategies and technologies that foster sustainable business growth.
- **Non-Tech-Savvy:** Most owners have basic digital literacy and are not comfortable using complicated tools for business management. Others may be new to digital tools but are eager to learn. The chatbot is designed to be intuitive and user-friendly, accommodating varying tech expertise.

IMPLEMENTATION STRATEGIES:

The implementation of the AI-powered chatbot solution will adhere to a structured, phased approach, ensuring a focus on thorough testing, user feedback, and gradual feature rollout. The project will be divided into four key phases:

Phase 1 : Development

- **Building Core Features:** Develop essential functionalities such as financial tracking, budget planning, profile assessments, and loan suggestions. Ensure these features are interconnected for a cohesive user experience.
- **Integrate AI Capabilities:** This includes training the AI model on relevant financial data and bakery owner inputs, allowing for real-time suggestions and feedback.
- **Database Setup:** Establish a secure, scalable database to store user profiles, financial data, historical performance metrics, and assessment results while ensuring compliance with data protection regulations.

Phase 2: Testing and Feedback

- **Conduct Alpha Testing:** Perform internal tests within the development team to identify and resolve bugs, usability issues, and performance challenges.
- **Beta Testing with Target Users:** Deploy the chatbot to a select group of micro-bakery owners for real-world testing. This stage will focus on gathering feedback on usability, functionality, and overall satisfaction with the chatbot experience.
- **Iteration and Improvement Process:** Based on feedback from beta testers, make necessary adjustments to enhance features, improve user interface design, and ensure the chatbot meets user expectations.

Phase 3 : Launch and Evaluation

- **Launch the Chatbot:** Officially deploy the AI-powered chatbot, making it accessible to all micro-bakery owners.
- **User Training and Support:** Provide comprehensive training materials, including step-by-step guides, video tutorials, and FAQs to help users navigate the chatbot effectively. This implementation is based on allocated resources and availability.

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- **Monitor Performance:** Implement robust analytics to track user engagement, chatbot interactions, and overall performance metrics. This data will be crucial for ongoing evaluation and enhancement.
- **Impact Evaluation:** Conduct follow-up surveys and analyze usage data to evaluate the chatbot's impact on financial management and growth for micro-bakeries. Use insights from this evaluation to plan future updates and enhancements.

Phase 4: Maintenance and Updates

- **Regular Updates:** Schedule periodic reviews and updates to the chatbot based on user feedback, technological advancements, and changing market conditions.
- **Continuous Learning:** Ensure that insights and recommendations remain relevant and actionable over time especially the loan eligibility and recommendations.

4. Key Metrics for Success

A. User Engagement Metrics

- **Active User Rate:**
Calculation: Divide the number of monthly active users by the total registered users, then multiply the result by 100 to get the percentage of active users.
Target: Achieve **60%** of registered users active monthly.
- **Net Promoter Score (NPS):**
Calculation: Subtract the percentage of detractors (users who rate their likelihood to recommend the app from 0 to 6) from the percentage of promoters (users who rate it 9 or 10).
Target: Aim for an NPS of **+30 or higher**, indicating good user satisfaction.

B. Financial Impact Metrics

- **Revenue Growth Rate:**
Calculation: Subtract the previous year's revenue from the current year's revenue, divide the result by the previous year's revenue, and then multiply by 100 to find the percentage increase.
Target: Target a **20%** increase in user-reported revenue annually.
- **Profit Margin Increase:**
Calculation: Subtract the previous profit margin from the current profit margin, divide the result by the previous profit margin, and multiply by 100 to express the increase as a percentage.
Target: Aim for a **15%** increase in profit margins reported by users within one year.
- **Loan Acquisition Rate:**
Calculation: Divide the number of users who successfully obtained loans by the total number of users who sought loans, then multiply by 100 to find the percentage of users who acquired loans.
Target: Target **40%** of users successfully obtaining loans after using the app.

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- **Operational Cost Savings:**

Calculation: Subtract the current operational costs from the previous operational costs, divide the result by the previous operational costs, and multiply by 100 to express the savings as a percentage.

Target: Set a goal for users to achieve an average of **10%** reduction in operational costs.

Technical Details

5. Technology Stack

- **Google Gemini:** Provides AI for language understanding and generation.
- **LangChain:** Manages the workflows and integrates AI interactions.
- **Supabase:** Stores and manages user data.
- **Flask:** Backend server for chatbot logic.
- **Messenger API:** Frontend for chatbot deployment.
- **GitHub Actions:** Automates regular updates for users.

6. Data Requirements

- **Articles/Journals about Local Bakeries (2020 to Present) :** This includes research that explores expansion strategies, financial management, and risk/crisis management, especially for small bakeries in the Philippines. It also includes case studies of successful bakery expansions, particularly those that highlight how local bakeries have overcome challenges and crises.

Sources: Utilize academic databases like Google Scholar, JSTOR, or ResearchGate. Local universities might also have relevant publications and will be deemed for considerations.

- **Studies with Profile Assessment about Business:** This utilizes data from relevant studies and questionnaires to assess the operational challenges and resource availability faced by local bakeries in the Philippines. This data will be used to generate insights into common traits and challenges, enhancing the AI-driven assessment by providing contextual background for tailored recommendations and supporting the growth and improvement of these businesses.
- **Profile Assessment Data:** Data collected through built-in integration during the AI-driven assessment, which will be used for various features within the platform. This includes insights into operational efficiency and financial health.
- **BPI Loan Products :** Loan types, eligibility criteria, application processes, and interest rates. Specific features tailored for small businesses or micro-enterprises.

Sources: The official BPI website and customer service for the most current information about their loan offerings. This can be particularly useful for providing actionable recommendations within your app regarding financing options.

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- **Market Trends Data:** Collect data on current trends in the bakery sector, including popular products, seasonal demands, and consumer preferences. This information can guide bakery owners in aligning their offerings with market demands.

Additional Information

7. Challenges and Risks

A. Data Privacy and Security Concerns

The chatbot gathers user data which include confidential business information. Bakery owners may hesitate to provide data especially if they have had negative experiences with online platforms or financial services in the past.

Mitigation Strategy:

- Communicate the platform's privacy and data security policies to the users clearly before letting them take the profile assessment.
- Integrate strong encryption and secure data storing processes on the backend to protect user data.
- Allow users to control how much information they share and offer anonymized recommendations when possible.
- Use transparent AI practices to explain how recommendations are made to reduce distrust.

B. AI Model Training and Bias

AI models may struggle to provide accurate assessments or recommendations if they are trained on biased or insufficient data which may lead to unreliable growth strategies or financial suggestions for the business.

Mitigation Strategy:

- Ensure diverse training data, covering different types of bakeries including urban, rural, and bakeries of varying sizes.
- Continuously refine and validate the AI models with feedback from actual bakery performance.
- Implement a feedback loop that will allow bakery owners to report inaccuracies, helping improve the model over time.

C. Data Availability and Accuracy

Many micro local bakeries may not have accurate or consistent records of their business metrics such as sales, financial statements, and operational data, making it difficult to generate reliable insights.

Mitigation Strategy:

- Develop a simple, user-friendly data entry process for bakeries to input their business data regularly.

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- Utilize publicly available data (e.g., local economic trends) to supplement and enhance insights.

References

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Reminders

October 16 - Submission of initial proposal (PDF format)

Kindly fill in this template, download as PDF and submit it on or before the deadline. The deadline for the Initial Proposal in PDF format is October 17, 2024 12:00 AM. Entries submitted on October 16, 2024 at 11:59 PM are still accepted.

October 30 - Submission of final proposal (Video format)

More info on the video duration will be shared after October 16.

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