University of Science and Technology of Southern Philippines

College of Information Technology and Computing Department of Computer Science

AniTulong

A Start-Up Business Proposal presented to the
Department of Computer Science
College of Information Technology and Computing

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December 09, 2024

1. Executive Summary

1.1.Project Background

AniTulong addresses economic losses and food waste caused by cosmetic standards in produce markets, where surplus goods are often discarded. This issue results in farmer losses and food insecurity approximately 1,717 metric tons of food daily [1, 2].

1.2.Problem Statement

Many rural Filipino farmers face crop losses from cosmetic imperfections, rendering their produce unsellable and contributing to food waste and economic hardship. The Department of Agriculture estimates that up to 30% of vegetables are wasted due to logistics and market inefficiencies [6]. This issue intensified during the pandemic, forcing farmers to discard unsold crops due to fluctuating demand [5].

1.3.IT Solution

AniTulong is a mobile app connecting farmers directly with consumers and businesses to sell surplus or cosmetically imperfect produce. By bypassing middlemen, it helps farmers earn more while reducing food waste [4]. Consumers benefit from lower-priced fresh produce, and the platform promotes bulk buying and subscriptions to further minimize waste [4]. This model ensures equitable access to fresh food and promotes sustainability [5].

1.4.Objectives

AniTulong aims to empower local farmers by increasing their profitability through a direct-to-consumer platform, reducing food waste by rescuing surplus and cosmetically imperfect produce and promoting sustainability in the food supply chain. The platform seeks to enhance access to affordable fresh produce for urban communities, foster long-term partnerships with farmers, and provide a seamless and efficient customer experience, ensuring both social and environmental impact.

1.5.Scope and Limitations

The platform initially targets Cagayan de Oro, offering surplus produce at discounted rates. While this strategy addresses urban food needs, it faces challenges such as limited farmer access to technology and digital literacy. Seasonal availability of produce and logistical hurdles may also impact efficiency. Building trust with farmers and establishing partnerships with local businesses will require significant time and effort.

1.6.Project Significance

AniTulong plays a role in mitigating food waste and supporting the livelihoods of Filipino farmers. By offering a platform to sell surplus and cosmetically imperfect produce, it reduces environmental waste and boosts farmer incomes. Urban consumers benefit from affordable, fresh options, addressing the issue of rising food costs. This initiative contributes to sustainability, local economic growth, and limited support for local farmers [7].

1.7.Target Market

Our primary target market includes urban consumers and small businesses, such as restaurants and grocery stores, seeking affordable, fresh produce while supporting sustainable practices. Target consumers are aged 25 to 50, generally environmentally conscious, and motivated by price savings and convenience.

1.8.Pricing Strategy

AniTulong uses a cost-plus model with a small markup for logistics and farmer compensation. Dynamic pricing adjusts based on supply, offering discounts during surplus periods and higher prices when supply is low. A subscription model ensures consistent revenue with discounted regular deliveries, while bulk and tiered pricing encourage larger purchases and reduce waste.

2. Methodology

2.1.Research Design

AniTulong will adopt an incremental development model, allowing features to be built and refined iteratively. This approach will ensure flexibility, enabling adjustments based on user feedback gathered during each phase. Stakeholder input will be integrated after every iteration to enhance the platform's usability, functionality, and alignment with user needs, ultimately minimizing development risks.

2.2.Detailed Methodology

2.2.1. Requirements Gathering

The team will conduct interviews and surveys with key stakeholders, including farmers, sellers, and third-party logistics providers such as warehouse operators. These activities will help identify pressing challenges in produce distribution, surplus management, and storage needs. Input from urban consumers and small businesses will also be gathered to better understand their preferences and expectations for affordable and accessible produce. The collected data will serve as the foundation for defining the platform’s features and ensuring alignment with stakeholder requirements.

2.2.2. Analysis and Design

The analysis phase will involve creating user stories and use cases to outline the specific needs and interactions of users with the platform. Diagrams, such as UML (use case and activity diagrams), will be developed to model workflows, user interactions, and system behavior in a clear and structured format.

Wireframing will be performed using Figma to visualize the platform's interface, ensuring an intuitive and user-friendly design. For the actual front-end, React MUI will be used to create a responsive and efficient front-end design, ensuring compatibility with various devices and platforms. These preparatory steps will help streamline the development phase and align the system's design with user needs.

2.2.3. Development

The mobile application will be developed using Flutter and Dart to ensure cross-platform functionality, providing a seamless user experience on both Android and iOS devices. Google Maps API will be integrated to enable real-time route optimization and tracking for efficient delivery logistics. Firebase will be employed as a backend service for data storage and real-time synchronization, while secure payment integration will be achieved through platforms such as Stripe or PayPal.

The development team will also incorporate real-time notifications using Firebase Cloud Messaging to improve communication between users. To enhance scalability, reusable components and modular coding practices will be implemented.

2.2.4. Testing

Black-box testing techniques will be employed. Equivalence Partitioning will be used to test various input scenarios, ensuring that the system can handle all anticipated user interactions effectively. System Testing will be performed to ensure the entire application functions as an integrated whole. Performance testing, including load and stress testing, will assess the platform's scalability and responsiveness under high usage. Security and portability tests will evaluate the system's resilience to threats and its compatibility across different devices and operating systems. This comprehensive testing phase will help ensure the platform meets high-quality standards before deployment.

2.2.5. Evaluation

User testing will be conducted by deploying the platform to a selected group of farmers, small businesses, and urban consumers to gather hands-on feedback. Surveys will incorporate a Likert scale to quantitatively measure user satisfaction, ease of use, and overall functionality. Interviews will supplement this with qualitative insights into specific challenges and improvement areas. The collected data will be analyzed using descriptive statistics to identify trends, average responses, and usability ratings. Software validation will confirm that the platform fulfills its intended purpose and meets stakeholder requirements, while verification will ensure compliance with all technical specifications and development standards. This phase will also include an assessment of the platform's overall effectiveness in addressing the identified challenges of surplus management and accessibility.

3. References

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