



RURALROOTS: A WEB-BASED AGRI FARMER'S MARKETPLACE

Rationale/ Introduction

Farmers in the Philippines confront severe obstacles, with a 30% poverty rate, which is double the national rate, and income disparity concerns. These difficulties are caused by a variety of factors, including a lack of access to capital, postharvest facilities, the effects of climate change, market access barriers, and the slow adoption of innovative farming technology [Philippine Statistics Authority (PSA) 2021 Data; World Bank; Global Climate Change Index 2021; Typhoon Rai damage report]..

A beneficial option is to establish a marketplace for local farmers to showcase their agricultural products. It gives farmers greater control by connecting them with buyers, reducing pricing and market access difficulties, and boosting sustainability. It minimizes dependency on intermediaries by allowing direct sales to customers, potentially improving farmers' revenue. Furthermore, the marketplace can help to reduce food waste while also supporting locally produced, sustainable goods. In this setting, creating a marketplace for agricultural products is more than simply a practical operation; it is a critical answer to the serious problems confronting Filipino farmers.

The marketplace has an impact that extends beyond the agricultural community; in the long term, it has a beneficial impact on local economies, promotes sustainable agriculture, and promotes poverty reduction. This project not only solves the various agricultural issues that Filipino farmers confront, but it also offers a more wealthy and bright future for them and their communities.

Significance of the Study

A significant effort is taking root in the core of the Philippines' agricultural situation. The main purpose of this project is to provide an online marketplace for local farmers in the Philippines designed to showcase their agricultural products. It strives to empower farmers by giving them the tools they need to create their store profiles that effectively showcase their goods, which include a wide variety of crops. Farmers may gain the ability to reach more customers by using these projects, which extend beyond their local area to serve across the nation or geographically



specific target market. The goal is to bridge the gap between farmers and customers by enabling farmers to sell their products, set competitive pricing, and connect with possible consumers. This platform not only facilitates transactions, but it also promotes effective communication between buyers and sellers, improving the overall efficiency of the agricultural industry.

Scope and Limitations of the Study

The RuralRoots project aims to economically empower small-scale farmers by providing a digital platform that expands their market reach and facilitates direct sales of agricultural products. The platform is designed to connect farmers with buyers across different regions in the Philippines, allowing them to transition from local sales to a broader customer base. To ensure accessibility, RuralRoots focuses on developing a user-friendly interface that caters to both technologically proficient and inexperienced users. Additionally, the platform incorporates geo-targeted search functionality, direct buyer-seller communication, and educational resources on online marketing, sustainability, and quality assurance to support farmers in maximizing their earnings and improving their agricultural practices.

Despite its comprehensive approach, the project has several limitations. First, the platform's effectiveness depends on internet accessibility and digital literacy among rural farmers, which may limit adoption rates in areas with poor connectivity or minimal exposure to online tools. Second, while RuralRoots aims to enhance market access, logistical challenges such as transportation, delivery infrastructure, and supply chain management remain external factors beyond the platform's direct control. Additionally, the success of direct sales transactions is reliant on buyer trust and engagement, which may require continuous efforts to establish credibility and mitigate potential risks related to fraudulent activities or product quality concerns.

Nonetheless, RuralRoots offers a promising solution to the economic challenges faced by small-scale farmers, fostering digital inclusion and sustainable agricultural development. By leveraging technology to expand market opportunities and providing farmers with essential knowledge, the platform contributes to poverty reduction and long-term economic stability. Future enhancements may include partnerships with logistics providers, financial institutions, and government agencies to further support farmers in overcoming infrastructure and resource limitations.

Objectives of the Study

"RuralRoots" is driven by the imposing goal of economic empowerment. The project



Republic of the Philippines
CAVITE STATE UNIVERSITY
Don Severino de las Alas Campus
Indang, Cavite

aims to empower rural communities, particularly small-scale farmers, through developing a digital platform that allows them to reach larger markets and earn more money through direct sales of agricultural products.

By economically empowering farmers, the project aims to contribute to poverty reduction actions nationwide while also encouraging long-term viability and ecologically aware approaches to farming. The growth of market reach is an essential component in accomplishing these objectives. 'RuralRoots' aims to facilitate farmers' market reach, allowing them to transition from serving local or regional markets to serving national or specified target regions within the Philippines.

'RuralRoots' chooses a comprehensive approach to achieving these greater objectives. The developers are committed to creating a straightforward and user-friendly online platform so that all users, both technology proficient and not, may browse and use the system with ease. Furthermore, the developers lay a major focus on facilitating direct communication between buyers and sellers, as well as providing farmers with contact information to build assurance and successful transactions. The project will use a geo-targeted search function to help customers identify locally produced agricultural goods that match their needs, and provide farmers with learning tips and tutorials for effective online marketing, sustainability, and quality assurance procedures.

Expected Outputs

The system begins by preparing the text data for analysis. This involves cleaning the text by removing unnecessary characters, punctuation, and symbols to ensure clarity and coherence. Then, the text will undergo tokenization, where it is broken down into individual words or tokens for further examination. Normalization follows by standardizing the text by converting it to lowercase to maintain consistency in analysis regardless of capitalization variations. Stop words such as common and insignificant words like "the" or "and," are then removed to focus on meaningful content. Lastly, lemmatization or stemming is applied to reduce words to their root forms. Once the text is preprocessed, the system will employ a Naive Bayes Classifier to determine the sentiment of the comments. This classifier learns from a labeled dataset of Facebook comments to understand the patterns associated with positive, negative, and neutral sentiments. By extracting relevant features from the training data, the classifier becomes proficient in predicting the sentiment of new comments based on the learned patterns.

Furthermore, the system integrates Semantic Role Labeling (SRL) to gain insights into the contextual relationships within the comments. Through dependency parsing, it analyzes the grammatical structure of sentences and identifies relationships between words, such as subject-verb-object relationships. Semantic roles including entities such as agents, patients, times, or locations are then assigned to words or phrases within the comments. By integrating this contextual information with sentiment analysis, the system will achieve a deeper understanding of the emotions expressed in the comments.

To implement the system effectively, several materials are required including a dataset of labeled Facebook post comments, Python libraries for natural language processing tasks, a machine learning library like scikit-learn, and an SRL toolkit such as Stanford CoreNLP or spaCy.

References

- Concepcion, A., & Sy, C. (n.d.). Modeling the spread of fake news on social networking sites using the system dynamics approach. ASEAN Engineering Journal. <https://journals.utm.my/aej/article/view/19251>
- Duzen, Z., Riveni, M., & Aktaş, M. S. (2023). Analyzing the spread of Misinformation on Social Networks: A process and software architecture for detection and analysis. Computers, 12(11), 232. <https://doi.org/10.3390/computers12110232>
- Luo, H., Cai, M., & Cui, Y. (2021, December 16). Spread of misinformation in social networks: Analysis based on Weibo Tweets. Security and Communication Networks. <https://www.hindawi.com/journals/scn/2021/7999760/>
- Simulation of social media networks with agent-based modeling (2019). <https://www.theseus.fi/bitstream/handle/10024/174027/Frida-Gullichsen-thesis.pdf?sequence=2&isAllowed=y>
- Sulis, E., & Tambuscio, M. (2020). Simulation of misinformation spreading processes in social networks: an application with NetLogo. <https://ieeexplore.ieee.org/document/9260064>
- T, S. M., & Mathew, S. K. (2022, February 15). The disaster of misinformation: A Review of Research in Social Media - International Journal of Data Science and Analytics. SpringerLink. <https://link.springer.com/article/10.1007/s41060-022-0031>

