AGRIPRENEUR – A MOTIVATIONAL APPLICATION TO GENERATE ENTREPRENEURS

Project ID – 2021-090

Project Proposal Report

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Declaration

I declare that this is my own work, and this proposal does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other university or Institute of higher learning, and to the best of my knowledge believe it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidate is carrying out research for the undergraduate Dissertation under my supervision.

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Name of co-supervisor: Ms. Janani Tharmaseelan

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(Dhammika De Silva)

Signature of co-supervisor: _____ Date: _____

(Janani Tharmaseelan)

ABSTRACT

Most people say that anyone can become an entrepreneur, and that is true, anyone can indeed become an entrepreneur but not everyone can become a successful one. Becoming a successful entrepreneur takes a lot of time and effort and you have to have the required tools necessary in order to achieve the ultimate goal.

We aim to provide a tool that will not only help aspiring entrepreneurs start building their businesses but also guide them throughout the process so that they are not set up for failure. If any person has the determination to build a successful entrepreneurship and is willing to dedicate the required time and effort, our platform will definitely help guide them to the heights they aim on reaching.

Initially we plan on focusing on the agricultural domain, however this tool could grow to be so much more. With the surveys we did it can be deduced that most working people own some amount of bare land. This bare land alone can be converted into a gold mine with the right support tool, and this is what we plan to offer. By guiding these eager to learn, ambitious entrepreneurs with the use of our mobile application we will not only help the individuals but also help build the country's economy.

Key words: Machine Learning

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1. INTRODUCTION

1. Background

The definition of an entrepreneur is a person who sets up a business or businesses, by taking on financial risks in the hope of profit. This risk is magnified when the entrepreneur is living in a developing country as the amount of support provided to a beginner entrepreneur is minimal to none. Establishing a business requires a clear vision of the opportunities and goals, a great deal of commitment and the willingness to master numerous skills [1]. Furthermore due to this risk most aspiring entrepreneurs give up on their dream even before attempting and rightfully so. This will be the problem we will be attempting to solve using our project.

The concept of the growth of entrepreneurship in agriculture is becoming more important because we have embraced agriculture as part of our community in the Sri Lankan context. It has taken the form of business rather than culture in the changed scenario, so Sri Lankan farmers and agricultural practitioners should develop entrepreneurial skills to play a global role. Even though talked about in many contexts agricultural entrepreneurship has never had a support system that would help guide beginner entrepreneurs to build a solid business model.

The research component that will be implemented in our project will produce an end product in the form of a mobile application that will help aspiring entrepreneurs to start their journey and will also guide them through the whole procedure. This in tum will reward our economy in a great manner as entrepreneurs can play a vital role in the development of a country's economy, since they are a vital component to innovation, product improvement, decrease in unemployment and reducing poverty.

Although its contribution to the GDP has decreased significantly over the past decades (from 30% in 1970 to 21% in 2000), agriculture is the most important source of jobs for most Sri Lankan workers. The biggest advantage of entrepreneurship is the improvement of the economy [2].Therefore, since we are focusing on producing agricultural entrepreneurs, Sri Lanka can benefit a great deal from this project.

1.2 Literature Survey

After the analysis of multiple existing research papers that are based on the same domain as our project, we were able to gain very valuable and a much-needed insight about the research problems as well as the research gaps.

One research paper that we found, Crop Price Forecasting System Using Supervised Machine Learning Algorithms [3] revolves around two main issues of agriculture- Profit and Price. This paper takes these two factors into consideration and develops a system which accurately predicts the price of the crop as well as the profit of the crop. The system comprises of two actors, the Administrator and the Agricultural Department. The Admin maintains the entire System. The Department performs two main roles, Price Prediction and the Profit Prediction. The Parameters considered for Price Prediction are- Rainfall, Maximum-trade, Minimum Support Price (MSP), Yield. The Parameters considered for Profit Prediction are- Crop Price, Yield, Cultivation Cost, Seed Cost.

The above research paper addressed the problem directly and had proposed a solution that enabled profit prediction and price prediction of crops, however that solution does not provide a functionality for predicting future trending crops. Although many machine learning prediction models have been developed that use historical data to predict future crop yield, there has been no solution developed that predicted crops that would have higher selling value in the future.

1.3 Research Gap

Although the domain of agricultural entrepreneurship has been talked about a lot recently, there has not been a specific tool dedicated specifically to the purpose of producing and motivating entrepreneurs. An entrepreneur can be defined as a person who fails to conform to the traditional structured role given to him in the society and finds an exit to venture on his own [4].

According to the above definition of an entrepreneur and other literature it is evident that there is a risk in pursuing a career path of an entrepreneurship. Therefore having a tool that can be beneficial in guiding an individual through the process of building a reliable business will be a great pillar of support. Through our proposed solution we aim to provide just that.

A website called the Virtual Center for Enterprise was proposed in a research paper, the purpose of this website being [5,6] a place learners at any stage of their life can go to develop their competence in the knowledge, skills and to develop better behavioral practices that will be of use to them in the planning, establishment and subsequent running of their own business.

Although projects like the above mentioned are highly beneficial, our proposed solution will be the first system that will be entirely focused on converting an individual into an entrepreneur by motivating and providing all tools necessary. The below table 1.3.1 clearly shows the comparisons between the existing applications and our proposed solution Agripreneurs.

Table 1.3.1 Application Comparison

Features	FieldCheck App	Descartes Crop App	Agriprenuers
Crop visualization	Y	N	Y
Yield Forecast	N	Y	Y
Success Rate Forecast	N	N	Y
Target Audience	Farmers	Farmers	Anybody/Entrepreneurs
Suitable Crop	N	N	Y

recommendation			
Success rate according to area and crop type	N	N	Y
Disease detection and solutions	N	N	Y
Auction Platform	N	N	Y
IoT Realtime analysis	N	N	Y
Motivational Model	-	-	Y

1.4 Research Problem

The main research problem that we will be addressing is why developing countries such as Sri Lanka are lacking in the amount of people that invest their time in the entrepreneurship domain. Although entrepreneurs would receive high rewards when their business plans are executed successfully, there also lies a considerable amount of risk when starting an entrepreneurship. Many people dropped out of college and, unlike Steve Jobs or Mark Zuckerberg never became successful entrepreneurs, even though they tried very hard [1]. It is essential for entrepreneurship educators not to fall prey to these biases and not display an overly positive image of an entrepreneurial career [1].

Therefore, a proper system should be available that will not only enable aspiring entrepreneurs to start off their entrepreneurship but also guide them through establishing a solid business by keeping them motivated throughout the process.

Moreover since the domain we are focusing on for this application is agriculture, both the person using the application to become an agricultural entrepreneur and the country will reap benefits.

Entrepreneurial motivations indicate the reasons why people choose to start a business, in the meantime, many researchers also point out that different entrepreneurial motivations can lead entrepreneurs to have a different understanding of success. Considering the essential role of founder-entrepreneurs, their personal understanding might highly influence the company's development strategies and growing situation[7], [8]. Due to these reasons motivation will be the main aspect addressed in this research project.

The component of the research I will mainly be focusing on will be creating a platform where buyers and sellers can interact and bid for products using real time cloud services. In addition to this I aim to generate a data analysis model that will use machine learning to display crops that will be trending in the future. This will also serve as a motivation factor for the individuals that will be using the mobile application.

2. OBJECTIVES

2.1 Main Objective

The main objective for this project would be building an application that can motivate aspiring entrepreneurs to start off their entrepreneurship journeys and also guide them throughout the whole process of building a solid foundation to their businesses'. Furthermore the application should be well thought out and designed so that users do not loose motivation midway through the process.

2.2 Specific Objectives

1. Creating a bidding platform

This platform incorporated into the application will enable buyers and sellers to come together in real time and decide on a best price for the crop that is being sold. I will have to use real time cloud services in order to increase the reliability of this platform which in turn will facilitate end user experience and help motivation of users.

2. Generating a data analysis model to display trending crops

I will use machine learning in order to help generate a data analysis model that will help give users an idea of what crops are in high demand by sellers. In addition this will also help users make decisions when it comes to what crops they should invest in by providing them with detailed analysis of how much effort and money should be invested in a certain crop, and how much return on investment that crop can yield.

3. METHODOLOGY

3.1 System Overview Diagram

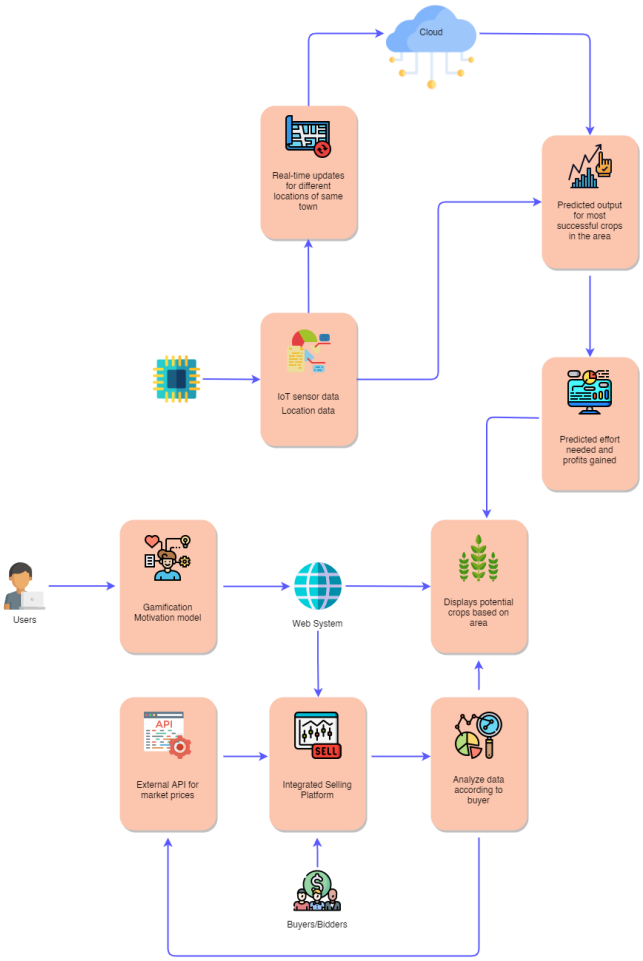

Figure 3.1.1: System overview diagram

3.2 Development process

The most suited development model would be an agile model such as the iterative model as one of my objectives is generating a model that can analyze previously collected data and learn from it in order to predict crops that would have a much higher return on investment for the agricultural entrepreneurs.

Throughout the development process there will be many changes that will be occurring and since four individuals will be working on the application, all components created by the members should have the ability to work together without errors. Furthermore it will be essential to merge all components from the get go as merging components while nearing the end stages will be catastrophic since many errors can occur. Due to these reasons the most appealing development model would be the iterative model.

In addition to the use of this development model, a Trello board will be used to help better manage the flow of the project.

3.3 Feasibility Study

3.3.1 Financial Feasibility

The ‘Agripreneurs’ project will be a mobile application, we plan to develop the system using most open source software systems, therefore there will be no added cost. There will however be a cost for hosting the website that is required to be delivered.

By taking into account these reasons, we can arrive at the conclusion that project ‘Agripreneurs’ will be financially feasible.

3.3.2 Technical Feasibility

The technologies that will have to be used will be associated with the development of the mobile application. For instance technologies such as JAVA will have to be used in order to develop a backend for the system. Furthermore technologies that will help develop a machine learning model for the prediction and data analysis model that I intend to create will have to be used as well.

All these technologies are readily available and therefore we can say that the project in technically feasible.

3.3.3 Resource Feasibility

The resources that will be required in order to develop the mobile application will be;

- Programming device
- Programming tools
- Programming individuals

Since all these resources are available, it is clear that the 'Agripreneurs' project has the required resource feasibility as well.

3.4 Requirement gathering and analysis.

Firstly a survey will have to be carried out in order to find out the availability of bare lands that are owned by individuals in Sri Lanka. Primarily the research will be focused more on individuals that reside in the Western province. Therefore we will carry out data gathering methods such as interviews to gain the required data needed for our research. This data that is gathered will be analyzed and then used in order to help guide us in making decisions such as which approaches to take when designing the mobile application and what data will be most critical in motivating these individuals.

3.5 Design

In the design stage, the main aspects of the application that we will have to be focusing on is the motivational aspect and to make the application reliable. The data gathered beforehand will be used in deciding how the application will be designed which will in turn directly result in better end user experience.

Sequential diagrams and class diagrams will be used in order to better understand how the application should function. Based on these diagrams the components will be designed, and with the use of these diagrams the overall design of the application will be better since there is a clearer picture of the required product.

3.6 Implementation

The implementation stage will carry a lot of responsibility as the components such as the bidding platform and the data analysis model will have to perform their required tasks. The bidding platform will have to update bids in real time using the cloud services, while the data analysis model will be using machine learning in order to predict crops that will be trending in the future.

Initially the functionality of these components will be focused on, and from that point onwards the non-functional requirements such as the accuracy and security can be focused on.

3.7 Integration and Testing

Table 3.7.1 Expected Outputs

Data	**Predicted Success**
Crop: Turmeric (Kaha) Area: Malabe	63%
Crop: Curry Leaves (Karapincha) Area: Malabe	86%

3.8 Work Breakdown Chart

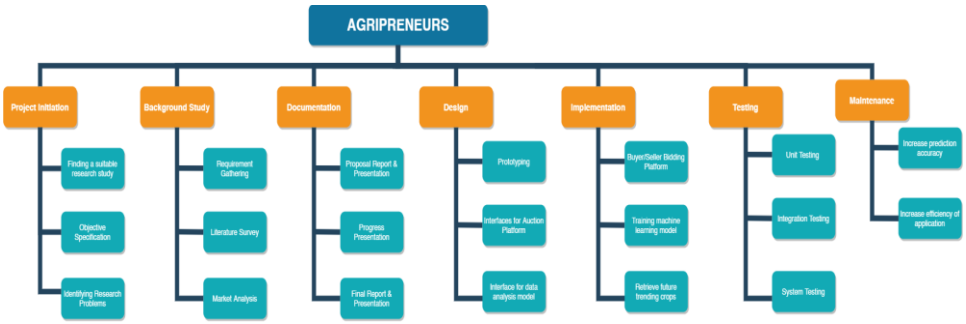

Figure 3.8.1: Work Breakdown Chart

3.9 Gantt Chart

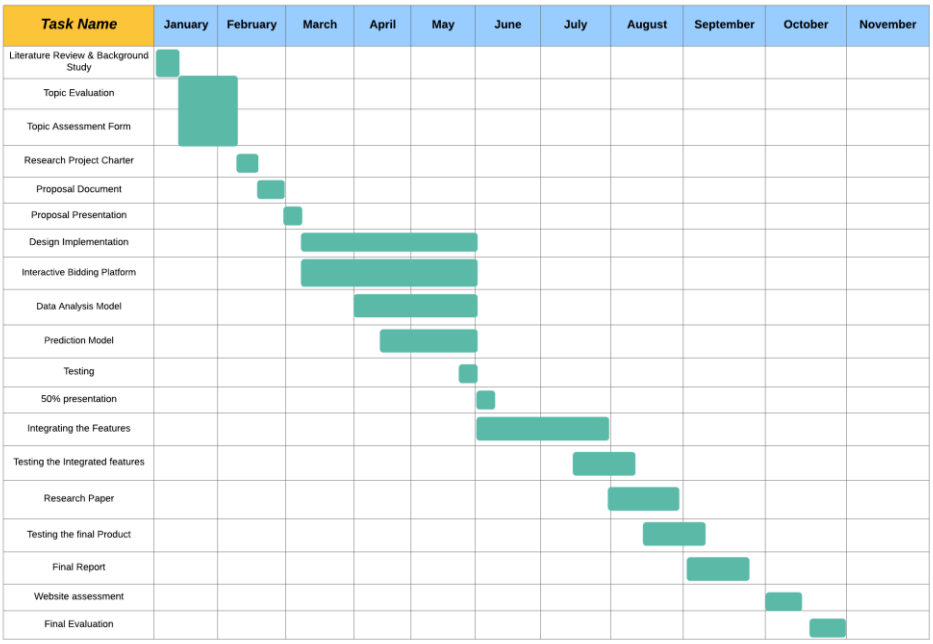

Figure 3.9.1: Gantt Chart

4. DESCRIPTION OF PERSONAL AND FACILITIES

4.1 Functional Requirements and Non-Functional Requirements

Functional requirements of this system:

- The bidding platform should show bids in real time.
- The trending crops in demand prediction should have an accuracy of 70%.

Non-Functional requirements of this system:

- Interoperability – Among other components of the system.
- Response time – Reasonable response time to output the results.
- Accuracy
- Motivational, addictive UI/UX designs

4.2 Technology and Tool selection

Technologies

- React Native
- Python-Django
- Cloud service platform
- ML algorithms

Tools

- Visual Studio Code
- Virtual Emulators (android)

5. CONCLUSION

This research project will be based on creating a concrete support system that will primarily help aspiring entrepreneurs to take the first step of achieving their entrepreneurship dreams. We hope to achieve that by designing a platform that will provide the users with all the data needed to prepare themselves in order to transform into an entrepreneur while also providing data that will help them analyze risk and overall build a business that will eventually benefit them as well as the country.

Reference

[1] Pawel Ziemianski, Jakub GolikFaculty, Including the Dark Side of Entrepreneurship in the Entrepreneurship Education, Gda´nsk University of Technology.

[2] Dias, C. S., Rodrigues, R. G., & Ferreira, J. J. (2019). Agricultural entrepreneurship: Going back to the basics. Journal of Rural Studies.

[3] Crop Price Forecasting System Using Supervised Machine Learning Algorithms

[4] Bhanshali S.G. "Entrepreneurship Development" Himalaya Publication Delhi, 1987.

[5] ELLEIEC: Enhancing Lifelong Leaming for the Electrical and Information Engineering Community. Online: http://www.elleiec.eu.

[6] Gao J., Ward A. E. The Preliminary Investigation into the Self-Efficacy of students taking an Accounting and Finance course in Undergraduate Engineering Degree Programmes // Electronics and Electrical Engineering. – Kaunas: Technologija, 2010. – No. 6(102). – P. 7–10.

[7] Shane, S., Locke, E. A. and Collins, C. J. (2003) 'Entrepreneurial motivation', Human Resource Management Review, 13(2), pp. 257–279. doi: 10.1016/S1053-4822(03)00017-2.

[8] Gorgievski, M. J., Ascalon, M. E. and Stephan, U. (2011) ‘Small Business Owners’ Success Criteria, a Values Approach to Personal Differences’, Journal of Small Business Management, 49(2), pp. 207–232.ght out and designed so that users do not loose motivation midway through the process.