LOCATION BASED PLATFORM FOR PROMOTING SUSTAINABLE AND EFFICIENT SHOPPING PRACTICES

Manicka Raja M[1], Kolanthaivel S[2,*], Vikash S R[2], Sabareeswaran S[2]

[1] Associate Professor, Computer Science and Business Systems, Sri Krishna College of Engineering and Technology, Coimbatore, Tamil Nadu, India.

[2] UG Scholar, Computer Science and Business Systems, Sri Krishna College of Engineering and Technology, Coimbatore, Tamil Nadu, India.

Mail id: kolanthaivel2001@gmail.com, Tel.: +919361440780

ABSTRACT

Farmers face challenges in connecting with customers and selling their produce directly due to lack of access to appropriate technology and infrastructure. At the same time, customers face difficulties in finding and purchasing fresh, locally sourced produce from reliable sources. Additionally, transportation and logistics are often major barriers to the efficient and timely delivery of produce from farms to customers. Access to essential food items such as cereals, pulses, and other grains can be a significant challenge for those living in remote areas, who often need to travel long distances to purchase them. In addition, unpredictable availability of these products in physical stores can lead to frustration and wasted time. To address these challenges, there is a need for a technology solution that enables farmers to connect with customers directly and efficiently, and that facilitates reliable and affordable transportation of produce from farms to customers. This paper proposes a web application that helps users find the nearest shop that stocks the desired products within a minimum transportation distance, reducing transportation costs and time consumption.

Keywords - E-commerce platform, internet, Location-based platform, online-grocery, online website.

1.INTRODUCTION

The current trend in agriculture and farming is a shift towards sustainable and eco-friendly practices. This includes organic farming, reducing the use of harmful pesticides and fertilizers, and adopting new technologies to increase efficiency and reduce waste. Additionally, there is a growing focus on the importance of supporting small-scale farmers and local food systems to promote food security, reduce the carbon footprint of food transportation, and strengthen local economies.

Finally, there is a growing recognition of the critical role that farmers play in preserving biodiversity and combating climate change, and efforts are being made to provide them with the tools and resources needed to continue to do so. Many retailers and grocery stores have developed their e-commerce platforms, and third-party platforms like Instacart and Amazon Fresh have also gained popularity. In addition, there has been a rise in online farmers markets and farm-to-table delivery services that connect consumers with local farmers and food producers.

273

As e-shopping for food continues to grow in popularity, there is also a greater focus on sustainability and reducing the environmental impact of food delivery. This includes efforts to reduce packaging waste and to develop more sustainable delivery models, such as electric or hybrid delivery vehicles.

The process of obtaining essential food items, such as cereals, pulses, and other grains, can be time-consuming and costly for those living in remote areas who must travel long distances to purchase them. The process can be time-consuming, costly, and even more challenging due to the unpredictable availability of products in physical stores. This can lead to wasted time and resources, which can be frustrating for consumers. Additionally, agriculture and farmers are facing increasing pressures due to land destruction and lack of support. Farmers often struggle to sell their products, leading to financial challenges that can negatively impact their livelihoods and the sustainability of agriculture.

2. LITERATURE REVIEW

This literature includes of studies analyzing the current methodologies used in location-based delivery and online-grocery shopping.

Online grocery stores have become increasingly popular in recent years. Products can be ordered online and delivered right to customers' doorsteps. However, some online grocery stores have limited product offerings and high delivery fees. Our proposed system addresses these issues by providing customers with a wide range of options and minimizing transportation distances. There are platforms like amazon, flipkart, indiamart, etc. where people will buy the cereals, pulses and grains for their needs, but these platforms are intermediates for people and farmers. These platforms will fix the price for the products like cereals, pulses and grains. And some platforms will not allow them to buy

wholesale. These apps will get from farmers and store it and deliver it when the user orders through the app. And they will add the delivery fee and additional amount for the products. And these platforms will focus on their brand name only and not promote the shops they buy goods and farmers. There will store inventories some time it will leads to wastage of foods.

And some of the disadvantages to the existing model is are

● Cost: Due to the intermediate app the cost will be high compared to when we buy directly. The cost will be fixed by the app owner.

● Inconvenience: First these people will buy from farmers and then they will update in the app and then only it will display in the app, so it is a time-consuming process and there are many inconveniences in the process.

● Delivery fees: The third-party platforms like amazon, flipkart will charge the delivery fee for the products.

● Lack of community engagement: Online shopping platforms like Amazon do not provide the same level of community engagement and support as location-based platforms. Shopping locally can help support small businesses and promote a sense of community.

3. IMPLEMENTATION

The proposed system is a web application designed to simplify the process of purchasing essential food items such as cereals, pulses, and other grains, while promoting sustainable agricultural practices. The application will allow users to find the nearest shop that stocks the desired products within a minimum transportation distance, reducing transportation costs and time consumption. To use the application, users will enter their location and the number of resources they require. The application will then display a list of shops that stock the

274

required products within a minimum transportation distance. Users can then choose the shop that suits their requirements and proceed with the purchase. By supporting local farmers and agriculture, the proposed system promotes sustainable agriculture practices and reduces food waste. The application will connect local farmers and their produce with consumers, providing a platform for them to sell their products. This will not only benefit the farmers but also provide consumers with access to fresh, locally grown produce. Overall, the proposed system aims to create a sustainable and efficient system that benefits both consumers and farmers.

And this will help the user who don't want to travel for long distance and who don't want to spend more money on transportation cost. And there are many advantages like less cost, more convenience, reduce food wastes and promotes the economic development.

This methodology uses the two main technologies:

3.1 CLOUD:

The cloud will contain the shop details like shop name, resource available and location of the shop.

3.2 GPS:

Users location will be updated using the GPS of mobile. If the user is using in laptop the location will be updated by allowing location.

3.3 CALCULATION:

The minimum distance will be calculated by comparing all the shop by latitude and longitude. The formula for minimum distance is

$$Distance = ((X_2-X_1)^2 + (Y_2-Y_1))^{1/2}$$

Where X_2, Y_2 are shop co-ordinates and X_1, Y_1 are users co-ordinates.

And distance will be calculated for all shops in all combination and return the nearest shop details like name, location and distance from user location.

If there is new stock comes the farmers/ shop owner will update the stock in the database.
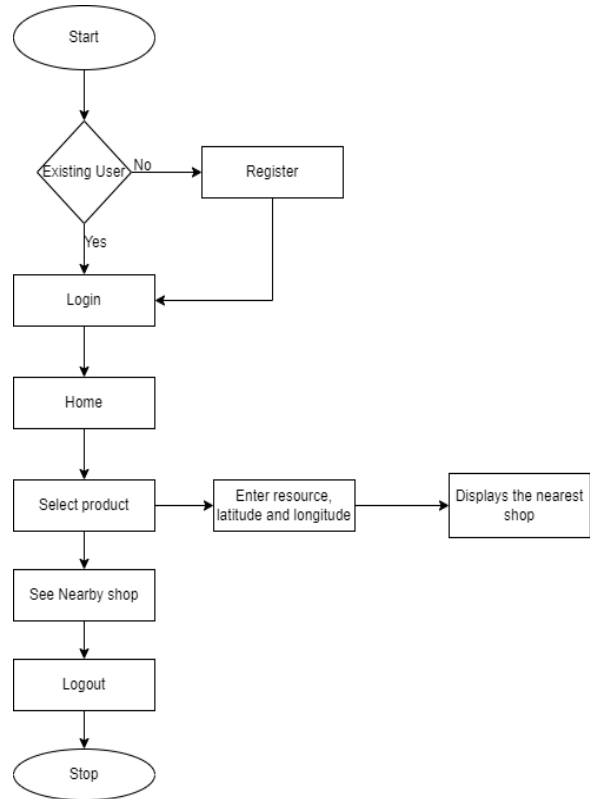
4. DESIGN SYSTEM

Figure 4.1: *Flow Chart*

This Flowchart describes how the user uses the application from signin/signout to logout. The user first registers themselves by providing emailID and Password. After successful registration the user login to the application. In the home page the user finds the detailed information of the application and they can select their choice of products that are available in the application. By selecting the products, the user proceeds by providing the amount of source they

require and the location of the user in means of latitude and longitude coordinates. With this user's information the application processes the calculation so that the distance between each shop is calculated. Finally, the result is obtained by means of the shop(s) to be visited and the minimum distance to reach that shop. This also provides the user with the details of all shops along with the kilogram available on each shop and their location by means of latitude and longitude coordinates.
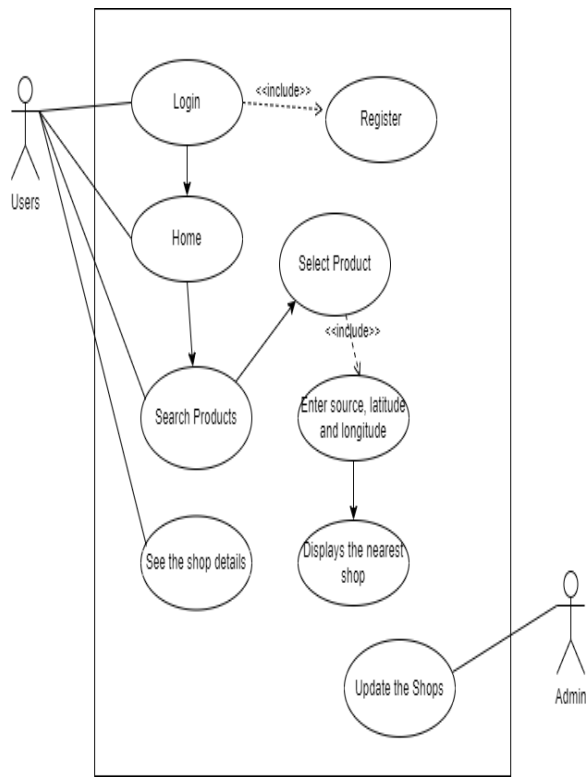

Figure 4.2: Static View of Actors Role

The Use case diagram shows the actors point of view to our application. The user will be Login/Signup to the website and he will be redirected to home page and here they will see the available products and they will select the product want they want to buy and in the user requirement page there will be asked about the requirement of the resource they want to buy and location of the user to calculate the nearest shop

where they can buy the product according to their needs. And they can also see the available shops and details of the shops. The admin will add the shops.

5. CONCLUSION

The proposed system provides an innovative solution to address the challenges faced by people who live in remote areas and have limited access to essential food items such as cereals, pulses, and other grain-related products. The system not only connects users with nearby farmers and shops that sell the desired products, but it also promotes sustainable agriculture and supports local farmers. The web application is designed to be user-friendly and easy to navigate, allowing users to find the products they need with minimal effort. The system's location-based search feature is a key element that enables users to find the nearest farmers or shops that sell the desired products, thus eliminating the need for them to travel long distances or go to multiple stores to find what they need. This feature saves users time, effort, and money, making it a convenient and cost-effective solution.

Moreover, the system encourages users to buy directly from farmers, which not only supports local agriculture but also ensures that users get fresh and high-quality products. By promoting sustainable agriculture, the proposed system contributes to the protection of the environment, reduces the carbon footprint, and promotes healthy and responsible food consumption.
Overall, the proposed system has the potential to make a positive impact on the food industry and the environment, while also benefiting users and local farmers. It is a win-win solution that can revolutionize the way people access and consume essential food items. With the increasing demand for sustainable and locally sourced products, the proposed system can play a crucial role in promoting sustainable agriculture and supporting

276

local farmers, thereby contributing to the development of a more sustainable and equitable food system.

REFERENCE

Journal Papers:

[1] Ajiboye, A. O., and O. Afolayan. "The impact of transportation on agricultural production in a developing country: a case of kolanut production in Nigeria." International Journal of agricultural economics and rural development 2.2 (2009): 49-57.

[2] Iduseri, Emily O., Josephat U. Izunobi, and Oyewole A. Oyelami. "Sustainable Development Goal 2 (SDG-2) and the Challenges of Transporting Agricultural Produce: A Case Study of Esan-West Local Government Area of Edo State, Nigeria." African Geographical Review (2022): 1-10.

[3] Milton, R. F., and R. K. Pawsey. "Spoilage relating to the storage and transport of cereals and oil seeds." International Journal of Food Microbiology 7.3 (1988): 211-217.

[4] Gbam, Barnabas. "Effect of transportation on the marketing of agricultural products in Jos North." Journal of Research in Business and Management 5.2 (2017): 99-106.

[5] J. Rezazadeh, K. Sandrasegaran and X. Kong, "A location-based smart shopping system with IoT technology," 2018 IEEE 4th World Forum on Internet of Things (WF-IoT), Singapore, 2018, pp. 748-753, doi: 10.1109/WF-IoT.2018.8355175.

[6] Morganosky, Michelle A., and Brenda J. Cude. "Consumer response to online grocery shopping." International Journal of Retail & Distribution Management 28.1 (2000): 17-26.

[7] Sunitha, C. K., and Edwin Gnanadhas. "Online shopping-an overview." B-DIGEST 6 (2014): 16-22.

[8] Shanthi, R., and Kannaiah Desti. "Consumers' perception on online shopping." Journal of Marketing and Consumer Research 13 (2015): 14-21.

[9] Singh, Reema, and Magnus Söderlund. "Extending the experience construct: an examination of online grocery shopping." European Journal of Marketing (2020).

[10] Kurnia, Sherah. "Online grocery shopping in Australia." The International Telecommunications Society Asia-Australasian Regional Conference, Perth, Australia. 2003.