



## Empowering Farmers through Digital Innovation

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### ABSTRACT

The foundation of our nation is agriculture. In India, the majority of people 60–70% rely on agriculture for their own sustenance, either directly or indirectly. Despite being India's primary industry, farming has both benefits and drawbacks for farmers. Many sectors have undergone radical change as a result of technology, and the agriculture sectors is no different. Typically, farmers spend the majority of their income on farming. However, they were not fairly compensated for their diligence. They only receive a smaller sum of money than what they originally invested. The internet platform shown in this abstract aims to close the gap between farmers and consumers by doing away with the need for middlemen and promoting direct communication. So, the main goal of our project is to construct a web application-‘Till the Soil’ this platform allows farmers to directly advertise and sell their products to consumers. The web portal functions as a virtual marketplace, giving farmers a specific venue to showcase their produce, such as fruits and vegetables. It is a key platform for India's development. Personalized profiles that highlight their farmed products, sales figures, and biographical information can be created by farmers. The till the soil service itself will make sure the items are delivered safely, which will benefit both farmers and consumers.

**Keywords:** Agriculture Sectors, Till the Soil, Farmers, Consumers

### 1 Introduction

For good returns on products. They found that the farmers having market information on their cell phones have greater involvement in market but very little number of farmers have cell phones in Agriculture is a significant economic factor in today's society. India is a key player in agricultural production. Our country sends more agricultural goods to foreign nations. India is ranked second in terms of agricultural product cultivation. The goods produced by farmers enter the hands of customers after passing via several middlemen, causing farmers to receive relatively little for their efforts, while we, the consumers, have to pay more than the true price. Retailers make significant profits from selling agricultural commodities. Farmers may not have access to data on consumer preferences, pricing, and market demand. This can cause over- or under-production of specific crops, making it difficult to balance supply and demand. Brokers and intermediaries can reduce farmers' profit margins. Often, farmers are sensitive to shifts in market pricing. Global supply and demand, geopolitical developments, and weather patterns can all affect the price of agricultural commodities. Because of these fluctuations, farmers may find it difficult to project their income and make financial preparations. Farmers may lack negotiating power when interacting with retailers. Globally, people's lifestyles and preferences have evolved, and economic conditions have improved, leading to increased wealth. Indian



consumers prefer to buy fresh fruits online, leading to changes in farming practices and eating habits. As a result, enterprises are focusing on providing fresh fruits and vegetables to meet consumer demand. The absence of reliable refrigeration facilities presents major difficulties for farmers who deal with perishable goods like fruits and vegetables. Such limitations may lead to deterioration and spoiling of quality, which impacts both consumer satisfaction and profitability. Additionally, the long distances between urban markets and rural farming communities raise transportation costs and raise the risk of product deterioration, particularly for goods that must be delivered quickly. Together with the challenge of balancing market supply and demand, these issues underscore how challenging it is to eliminate transportation barriers from the distribution of farmers' goods.



**Figure 1:** Example Image

Kashyap and Raut: In their research paper, they suggested that marketers should create or design new e marketing solutions to overcome these challenges. The Internet is a modern and technical way of solving various problems. E marketing, resulting in "anytime, anywhere" benefits, leads to efficient pricing. It also offers a transactional economy for business. They also began to influence the international market. Their objective is to promote private investment in agriculture-based projects to generate income and jobs in rural communities through innovative ideas. [1]

David-Benz et al: Has conducted an analysis of 582 respondents in Madagascar. Different methods used for dissemination of market information were evaluated and it was found that producer had views that better access to market information is necessary for their ownership. [2]

Dr Subhi Mohammed Ismaile et al: In their book also mentioned details about the concept and importance of agriculture marketing, the several types of agriculture marketing and also about their working. He also mentioned about pricing mechanisms, storage, grading methods, marketing margin etc. [3]

Due to the involvement of third parties in setting market prices for produce, the majority of farmers are economically disadvantaged. Farmers are defrauded by third parties because they are unaware of the daily agricultural market prices. We developed the "till the soil" web platform to address these issues. Thus, these kinds of farming websites might be farmers' best



friends since they allow them to increase their output without investing in new equipment. It can serve as a guidance for farmers as well. To avoid defrauding farmers, this web program assists farmers in selling them to customers at their own pricing. It is also a dependable method of product sales. On the consumer side, consumers can also purchase fresh produce straight from farmers. Additionally, farmers and consumers benefit from it. They can get in touch with the client directly as well, for their own requirements, consumers can also get in touch with farmers. On the farmer side, direct sales to consumers allow farmers to eliminate the middleman and related expenses. Prices and product listings are more within the hands of farmers. Farmers can save daily operating costs by requiring fewer employees. Even while an online store may have ups and downs like other establishments, it may provide a consistent presence all year round. In one location, farmers may arrange all of their sales channels, including direct-to-consumer and wholesale. Information about farmers is also available on our website, including their name, photo, home address, farm address, phone number, and all of the goods they offer that are listed. After careful verification, our on-field support team will gather all of the aforementioned information and post it on our webpage. Through this farmer can be empowered through digital innovation.

## **2 Recent Works**

A description of the current research on this website is given in this part. A lot of research has been done, and the process is still ongoing. As we are developing a web site called "till the soil". At start, there are two interfaces for consumers and farmers. To utilize this website, choose your own category. If they are new to agriculture, they must register first. Applicants must provide basic information, such as their name, phone number, and email address. After registering, users can access the website and browse a variety of products provided by farmers from various locations. If they are not new to agriculture, they can simply check in on our website. Farmers can sell their produce and receive notifications when they are sold out. If the user is a buyer, their interface will provide numerous purchasing possibilities. Users will receive product-specific recommendations on their home page. They searched for and purchased recent products as well as those from local farms.

### **List of Modules**

#### **A. Home Page**

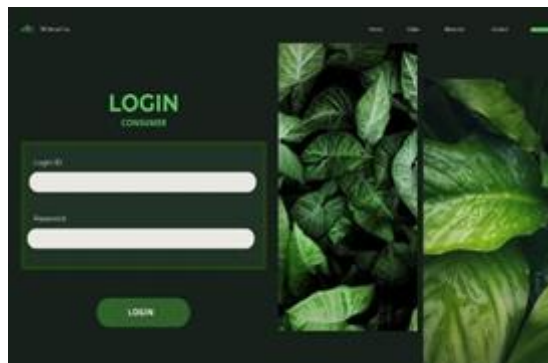
Our website's main page is the one that follows. Our home page would show the login and registration choices when our website is first accessed or if someone went to visit our website, they would need to sign up with their information.



**Figure 2:** *Example Image*

### **B. Consumer End**

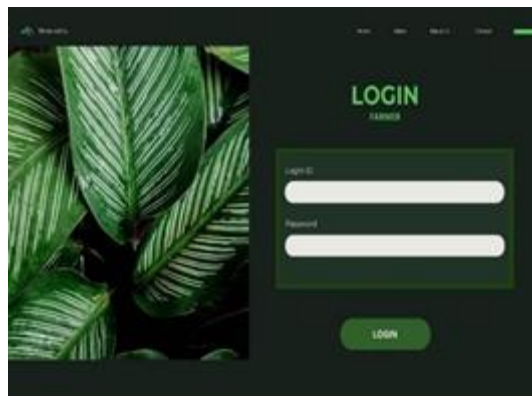
The buyer has a wide range of options when it comes to purchasing goods from their preferred farms. The consumer's end listed the items that were up for sale. Products that the user has lately purchased would fill the interface. Additionally, he or she can look for the farms and items they are looking for. For further information, they can also speak with the farmers directly. By selecting "add to cart," they can also put their preferred items in their cart. After that, it will be put in "my cart."



**Figure 3:** *Consumer End*

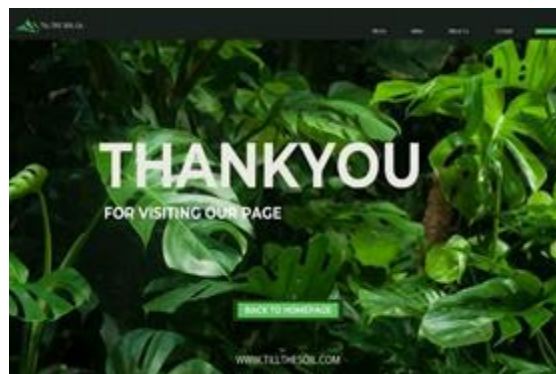
### **C. Farmer End**

This web application is mainly designed for farmers' own purpose. So, they had their own page with their things for sale as their interface. Additionally, they would receive notifications when their products are sold. Of their products. Their own advantage. Additionally, they are free to determine their own prices for their goods. They can also post pictures of their goods to entice customers to purchase them. Farmers also use it as a blog. Additionally, farmers might get in touch with their buyers directly, it will facilitate communication between the buyers and farmers.



**Figure 4:** *Farmer End*

Information about farmers is also available on our website, including their name, photo, home address, farm address, phone number, and all of the goods they offer that are listed. After careful verification, our on-field support team will gather all of the aforementioned information and post it on our webpage. This allows farmers to stay up to speed with the latest knowledge.



**Figure 5:** *Thank You Page*

### 3 Proposed Work

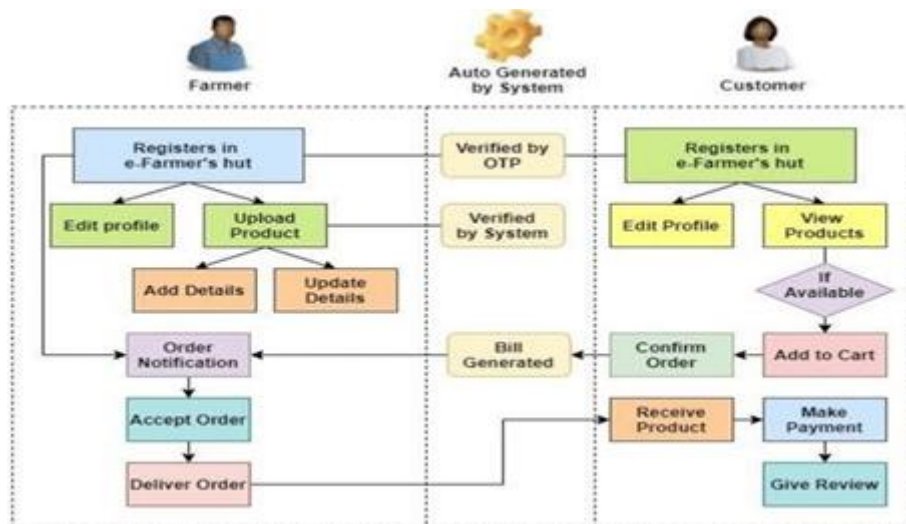
In the agricultural sector of India, farmers have lacked the depressing freedom to select the markets and consumers for the products they have painstakingly produced. This circumstance has made it necessary for them to boost their marketing influence, which has led to the creation of a brilliant solution: a website that enables farmers to yell louder in the marketplace. Research indicates that intermediaries, also known as mediators, hold significant power in the agriculture industry. Their supremacy has led to a shift in power dynamics, allowing them to control farmers and severely limit their revenue. This control has created a situation where the tireless efforts of devoted farmers who toil day and night. Farmers' burden is further increased by the significant financial investments they must make, such as taking out loans to purchase supplies like seeds, fertilizer, and other inputs. These expenses are essential to the farmers' efforts and support their rightful claim to financial benefits that come from their labor in the agricultural sector. To address these challenges, a revolutionary method is proposed to eliminate traditional middlemen and connect farmers and retailers directly. Middlemen, who



steal 70% of farmers' revenue, have controlled the market and left farmers powerless. This innovative solution's mobile or web website acts as an efficient interface that seamlessly connects farmers, growers, retailers, and consumers. The primary aims of this platform are to restore economic justice for farmers and to end the exploitative business practices of middlemen.

This innovative method allows customers and retailers to buy agricultural products directly from farmers, eliminating the need for intermediaries and their high price rises. The symbiotic connection benefits both parties: customers receive high-quality products at lower prices than the market, and farmers are compensated appropriately. The platform's concepts are both simple and impactful. Farmers can now submit detailed product descriptions, reaching a wider audience. Retailers and purchasers can browse and purchase listings within a set duration. This simplified approach enhances the supply chain, addressing information asymmetry and increasing transparency, trust, and efficiency. The strategy boosts farmers' pride and respect for their work by ensuring they receive a fair share of earnings. Reducing the role of middlemen can improve collaboration and reduce tensions among agricultural community members. This strengthens the socioeconomic fabric of Indian society and emphasizes the importance of agriculture in the country's development. The system's success marks a trend toward digitization, technology integration and empowering farmers in Indian agriculture. Combining agriculture with technology can speed the adoption of sustainable practices, optimize resources, and make data-driven decisions.

## Methodology



**Figure 6:** Proposed System's Workflow

The user interface initially displays the user's workflow. Users must register or login. After providing basic information, users can search for products relevant to their needs. The following interface is the farmer's interface. In that interface, it shows the products and details of what there have uploaded. They need to login or register and can see whether their products are sold



are not. The backend procedure involves the server controller. The server is handled by Apache, an application server. It stores and handles the user information. This is the main work in the backend.

#### 4 Results and Discussions

This Project will help farmers to sell their goods on this platform as readily and profitably as possible. It also appears that consumers can purchase goods directly from farmers for considerable price.



**Figure 7:** Website's Home Page

By clicking on the vegetable or fruit section, users can navigate to the page that best suits their needs. A cart with the add-to-cart items is located next to that. Next, view their details in the "My Account" area. There is a sign-up section if the customer does not have an account, and a login section if they are logged in or log out. Then there will be sections for adding products, instructions, and logging out for farmers. The navigation bar allows users to navigate the entire web application and access all of the pages they want. Customers can visit all tabs more easily thanks to it.



**Figure 8:** Fruits Page



**Figure 9: Vegetables Page**

Here, fruits, vegetables, and farmer information are arranged on different pages so that customers may easily purchase goods according to their need. Additionally, it makes it easier for customers to browse and purchase products, cutting down on search time. Descriptions of the farmers, the product, and the price in the 1 kg range are also included on this page. Customers will be taken to the product description page with an add-to-cart button after clicking on the item they need to purchase. Clicking that allows people to purchase goods.



**Figure 10: Product and Farmer description**

Fig 4 show in the description of the product and farmer. Clicking on a product on the Fruit and Vegetables page will take the user to the product and farmer description, where they may read the product description and learn about the information provided by the farmers. A "add to cart" button will appear next to the description; if the customer likes the item, they can add it to their cart and proceed with the purchase. Additionally, there will be a picture of the goods, its name, the seller's name, and the price per kilogram.

## 5 Conclusion

The primary goal of the website's development is to highlight and address the issues that farmers face. The farmers will be better able to choose their own prices for their own goods thanks to this. The buyers would be informed directly about their products. Thus, farmers don't have to worry. They could readily learn this because it was equally simple to use. Additionally, it will encourage and draw young people to farming. Because farming is a custom that has been practiced for many generations. It should be passed on next generations. We developed our



web program to help farmers in our own way, and it might also be a means to solve such issues. Our next future proposal was to include all farming-related information that farmers should be aware of which seeds to sow when to obtain the best results, how to plant them, how to water them, and how to cultivate the crops. Those farmers who lack agricultural knowledge will benefit from this. Additionally, this will benefit farmers who were new to farming.

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