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## A Framework for Agricultural Farm-to-Market Supply Chain

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**ABSTRACT:** The agricultural produce that flows to the urban markets, currently, has an inherent systemic problem, a disorganized sector that causes wastage and destruction of food in transit, resulting ironically in unbalanced demand and supply ratio. It is not the lack of food as much as it is the power to deliver it in a safe and timely fashion to the consumer. Studies have shown that currently, about 30-40% of food that is grown in India is wasted. Out of the many reasons like infrastructure, middlemen, and unregulated pricing, the most important is the safe flow of this commodity to and from a given location. This supply chain problem could be solved using technology. With around 75% of the population owning cell phones, designated pick-up and drop-off locations could be marked and alerted to the potential user. In this paper we propose to develop a user-friendly mobile application that could be used by the farmers and transporters in a way that is mutually beneficial. Help the farmers to get the best out of their product thereby increasing their standard of living, facilitate proper distribution of agricultural products to the right consumers, avoid spoilage of perishable farm products in transit, and reduce the gap between supply and demand and bring down prices to a reasonable level.

**KEYWORDS:** Supply Chain, farmers, supply and demand side, suppliers, vendors.

### 1. INTRODUCTION

The agricultural produce that flows to the urban markets, currently, has an inherent systemic problem, a disorganized sector that causes wastage and destruction of food in transit, resulting ironically in unbalanced demand and supply ratio. It is not the lack of food as much as it is the power to deliver it in a safe and timely fashion to the consumer. Studies have shown that currently, about 30-40% of food that is grown in India is wasted. Out of the many reasons like infrastructure, middlemen, and unregulated pricing, the most important is the safe flow of this commodity to and from a given location. This supply chain problem could be solved using technology. With around 75% of the population owning cell phones, designated pick-up and drop-off locations could be marked and alerted to the potential user. We propose developing a user-friendly mobile application that could be used by the farmers and transporters in a way that is mutually beneficial.

Agriculture in India contributes to just over 20% of the country's GDP, but provides employment to over 50% of the population. Further, most land holdings are very small – averaging around just a couple acres – and are shrinking as properties are passed down and divided among children in subsequent generations. As a comparison, an average U.S. farm is over 400 acres. This lack of scale makes it difficult for the small farmers to invest in modern equipment and infrastructure, and as a result, most struggle to make ends meet.

There are two main types of agricultural supply chains in India – one which is highly-regulated by the government and another that is run by the private sector. In the 1960s, due to concerns over food security, the Indian government created special rules for five key agricultural products – wheat, rice, pulses, sugar and edible oils. Wheat is managed particularly closely as it serves as the majority of the government's 55 million ton safety stock of food. Other products, such as fruits and vegetables, are generally unregulated and are handled almost entirely by the private sector. Both chains, not surprisingly, start on the farm.

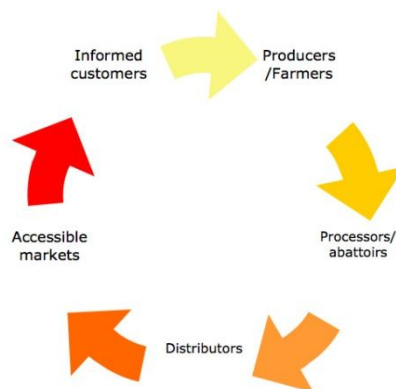


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Nearly all farmers sell their produce in government controlled markets, which are often just a few kilometers up the street from the farms. The transactions are handled predominantly by Commission Agents who negotiate prices with the farmers. The Commission Agents don't own the produce at any point, but rather find a buyer, usually the government or a produce trader, and then charge a percentage commission which generally ranges from 2.5-6% of the transaction value.



## II. SIGNIFICANCE OF THE STUDY

This study is conducted with four objectives in focus –

1. Help the farmers to get the best out of their product thereby increasing their standard of living,
2. Facilitate proper distribution of agricultural products to the right consumers,
3. Avoid spoilage of perishable farm products in transit, and
4. Reduce the gap between supply and demand and bring down prices to a reasonable level.

The areas of research will concentrate on –

1. Current problems and inefficiencies in the process and methods of transportation, storage and distribution of agricultural products,
2. The price variation in different areas,
3. Reasons for the gap between supply and demand caused by spoilage of products in transit, and
4. Conduct surveys on the supply and demand side of the distribution.

By undertaking the study outlined above, we will be able to build and fine-tune the application that will be used to level off the playing field for all farmers and consumers. What is hitting at the heart of the farmers is the monopoly of the food supply chain by the MNCs. Providing affordable and convenient way of a streamlined transportation and distribution process, will therefore increase the efficacy of what is otherwise wasted by neglect and disregard, or else abused by the so called middlemen at the cost of general public.

## III. METHODOLOGY

The most efficient methodology that can be applied to this project is the iterative methodology. Initially, a pilot phase of the product will be launched for a given set of customers. There is a need for setting up a broader network of suppliers, carriers and delivery points. Initially, the pilot phase could be used to put a structural framework in place. Once that is done the system will be tested as a whole integrated support system. We will then look at the problems encountered in terms of Application user intuitiveness, Scope of the project, Farmer and consumer feedback, and Profitability and price structure variation correction factors.

The second phase will be launched as an extension of the pilot phase which will logically be used as the production system. Continuous enhancements could be done to the system as more features could be added, as and when the need arises from different areas such as technology, user feedback and such.



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## IV. CONCLUSION

This paper presents a effective framework for be used by the farmers and transporters in a way that is mutually beneficial.

Providing affordable and convenient way of a streamlined transportation and distribution process, will therefore increase the efficacy of what is otherwise wasted by neglect and disregard, or else abused by the so called middlemen at the cost of general public.

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