Project Dissertation Report on

Field To Market

Submitted By

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CERTIFICATE

This is to certify that Himanshu Bahuguna (Roll No.16) has submitted the project report titled "**Field To Market** " in partial fulfillment of the requirements for the award of the degree of Master of Business Administration (Executive) from Delhi School of Management, Delhi Technological University, New Delhi during the academic year 2022-23

Date:

Place:

Signature of Supervisor(s)
Dr. Shikha N Khera
Associate Professor Delhi School of Management

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DECLARATION

I certify that

a. The work has not been submitted to any other Institute for any degree or diploma.

b. I have conformed to the norms and guidelines given in the Ethical Code of Conduct of the Institute.

c. Whenever I have used materials (data, theoretical analysis, and text) from other sources, I have given due credit to them by citing them in the text of the thesis and giving their details in the references.

d. Whenever I have quoted written materials from other sources and due credit is given to the sources by citing them.

Date:
Place: Delhi

Name of the Student: Himanshu Bahuguna
Roll No : 2K21/EMBA/16

Acknowledgement

I would like to express my sincere thanks to Dr. Shikha N Khera, for his valuable guidance and support in completing my project. I would also like to express my gratitude towards our principal Mr. Saurabh Agrawal (Program Coordinator) for giving me this great opportunity to do a project on "**Field To Market**". Without their support and suggestions, this project would not have been completed.

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OBJECTIVES OF STUDY

The objective of the study is to analyze the cause of dire performance of the agriculture sector and issues faced in the traditional approach of farmers as well as understanding the modern-day supply chain and what advancement can be made in the modern day supply chain through BlockChain Technology.
This paper talks about
1. Upliftment of farmers community.
2. Encourage and develop agricultural exports.
3. Updating rural people or farmers on the present and latest technology in area of farming
4. Accepting the global challenge with a commitment to provide better quality .

PROBLEM STATEMENT

In Agri- logistics one of the major issues is the perishability and product quality. More is the time length in harvesting and the time to reach the market lesser will be the price of produce. Hence time is considered as one of the major factors in the supply chain system. The main purpose is to assist the producers in the complex supply chain management system and to supply fresh produce to consumers. The agriculture sector in India requires investment to set up an infrastructure that will reduce the crop decay and fulfill the consumer needs as and when required.
However, the emphasis has been laid on the development and improvement of the Agri logistics system in such a way that all the parameters accompanied by the chain, especially the farmers are benefited as they are the leading and most crucial factor of the chain. These decisions should be taken at different stages as
• Stage 1: -**Operational decisions:** involves production management, inventory storage, distribution and transportation.
• Stage 2: -**Tactical decisions:** involves land to be allocated to each crop, variety of crop to be cultivated, scheduling of pesticides and fertilizers, irrigation duration and the available mode of transportation for agricultural produce.
• Stage 3: -**Strategic planning**: it aims to reach the most effective and efficient parameter of the supply chain system i.e., consumers by allocating the mandis and the market places that is easily accessible to them.

SCOPE/ LIMITATION OF THE STUDY

One cannot determine the exact factor and issue related to traditional as well as the Modern day supply chain, why some farmers still prefer going with the old ways of selling their crop to Mandis. The study also excludes the Cost difference between all the method described (Traditional, Modern Supply chain, Block chain technology) The study will exclude any kind of contingency circumstances

LITERATURE REVIEW

With increase in population as well as consumption there is increase in demand for agricultural produce, proper management among all the parameters of agriculture including production, harvesting, transportation, storing, packaging, marketing has become a necessity, to support this demand Market institutions play a crucial role in coordinating a link among these parameters. The results of the study reveal that the implementation of logistics in the Agri supply chain will allow the following:

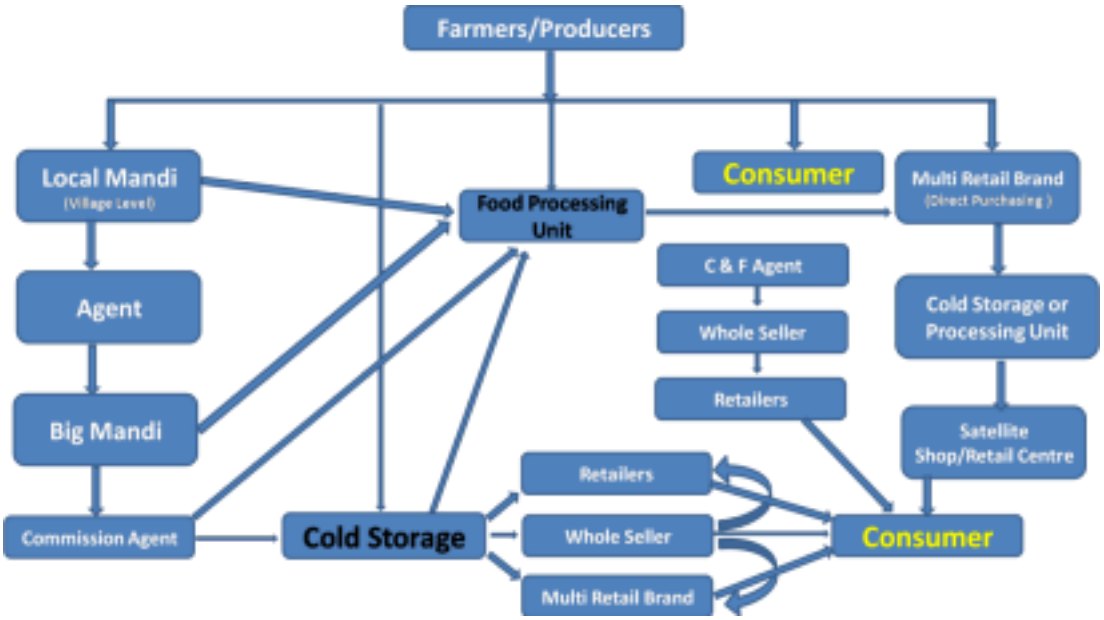
- Increasing effectiveness of the flow between the various parameters of the Agri-sector.
- Efficient and effective allocation of resources
- Building proper coordinating-transportation networks
- Management of Inventory and storehouses
- The Proper and continuous flow of Agri-products among all the different parameters

Hence, to provide coordination & link all the factors of the supply chain system a conceptual model is developed that enables to cope up with the problems faced in the agriculture sector.

RESEARCH METHODOLOGY

This research will aim to understand how technology has evolved in various sectors and how this technology can be implemented in Agri culture
This paper talks about the outcomes and benefits of implementing this technology. As traditionally we are following the Mandi system in Agri culture now there is need to change how things are done earlier
Therefore, we will be studying Supply Chain technology, its managements, how it is better than tradition Mandis, Modernising Supply chain management through Technology, implementing Block chain and evaluate why there is a need to migrate modern day technologies. We will briefly understand what are key features of Block Chain technology and developing a prototype for implementing block chain in current supply chain model

TRADITIONAL METHOD/ MANDI SYSTEM



In this farmer after harvesting their crop transport their produce to local Mandi in village where price is decided and payment is initiated which in some case done then and there and in some cases after some interval of time post the selling the produce in big mandi

After that the agent purchase the crop from village mandi and take it to big mandi where he has to pay commission to person operating these mandis where these crops are stored in cold storage / warehouses and sold to the retailers, wholesalers and other brands Once it reaches the Big mandi, role retailer comes which purchases from mandis and sells to the consumers or end user.

In this system, all burden of selling transporting of produce fall on farmer as needs to go through long process of selling their crop which is time consuming and led to delay of produce to reach the consumer also, he needs to pay commission in mandi to sell their produce because Farmers were facing huge loses and was not able to recover what they have invested whereas the middlemen were the once who were enjoying the benefits as the farmers have no other options than to sell to them

As the farm product were going through various phase which led to impact in quality of the product and consumers were not getting good quality of product

Dependence on Traditional System

As we look, we can find that many farmers living in India still sell a large portion of their produce in rural areas which results in little impact on their production. There are significant differences in prices available at different marketing levels such as rural wholesale market, second wholesale also in retail rates. Also, the level of sales in the villages varies from place to place and the goods depending on the goods, and (the social status) of the farmer.

According to village sales, there are about 20-60 percent of grain, 35-80 % of cash-crops and 80-90 % perishable goods. This practice is quite common today.

The items that are responsible for sale in the villages are:

a) Heavy borrowing loans from local lenders, traders or homeowners. So they are often forced to contract in advance or sell the product at very low prices.

b) Many villages still have proper connecting roads. There are no convenient transportation facilities so it is very difficult for them to carry the product markets which usually located in remote areas.

c) There is a small amount of product they can sell to sell because of the limited space available.

d) Farmers face many financial difficulties to meet their well-being and so on: obligations as a result of which they are forced to sell their produce in the valleys.

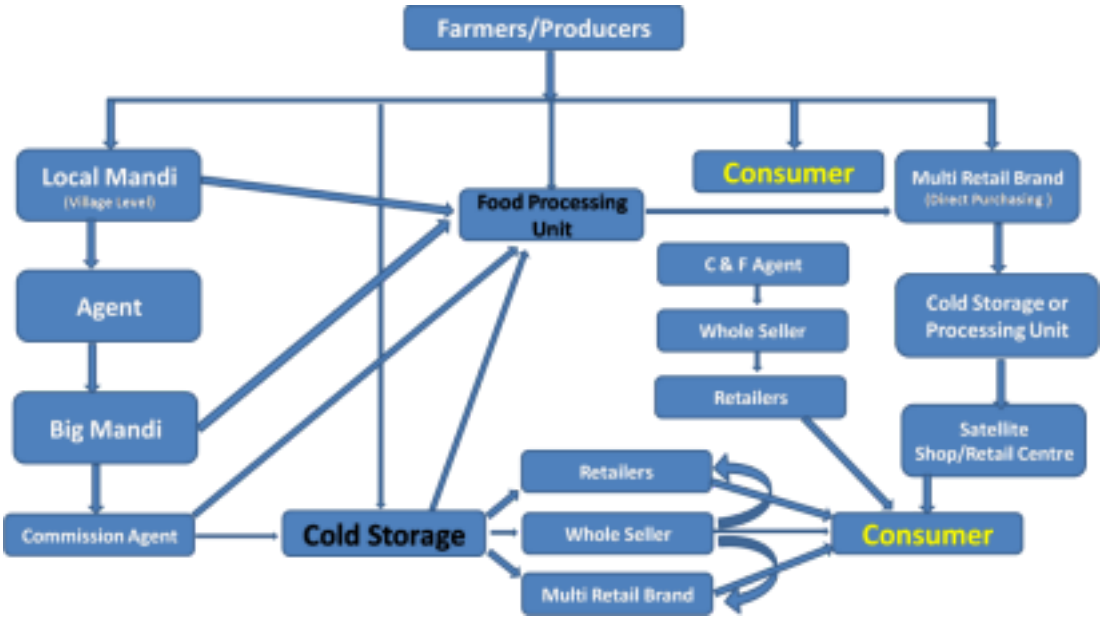
e) Many good perishable items naturally need to be sold in the valleys due to the tendency of spoilage and the unavailability of fast moving goods to the market place.

f) Many farmers do not like the urban markets due to lack of information about the current markets, their thinking about the urban situation is like transport theft, theft and other problems.

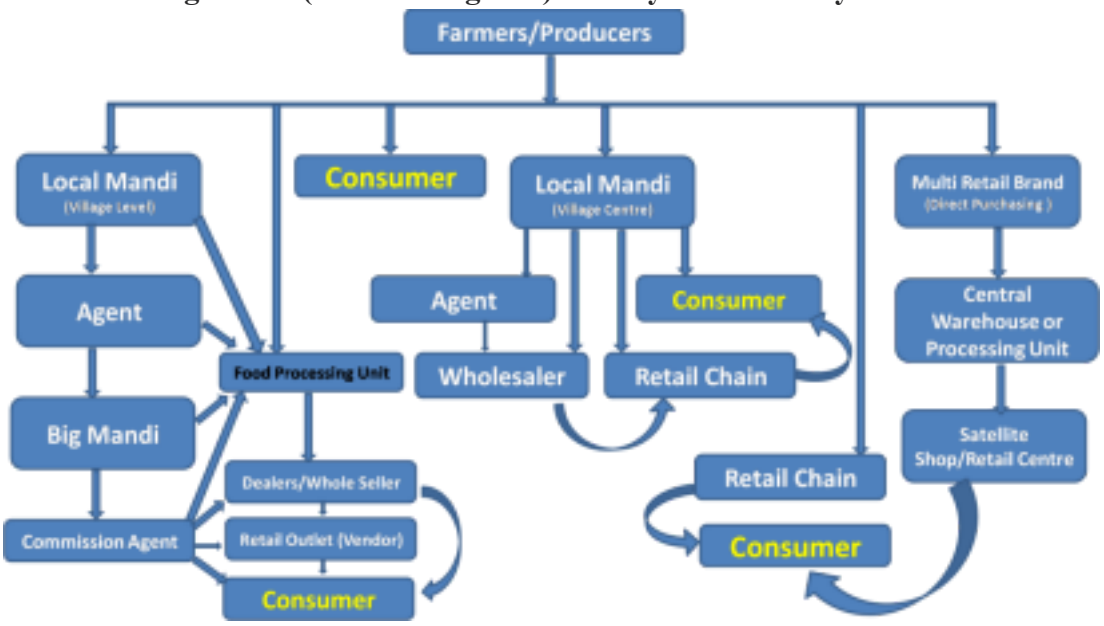
g) Lack of information on market prices for nearby commodities.

HOW FARM PRODUCT REACHED CONSUMER MANDI SYSTEM

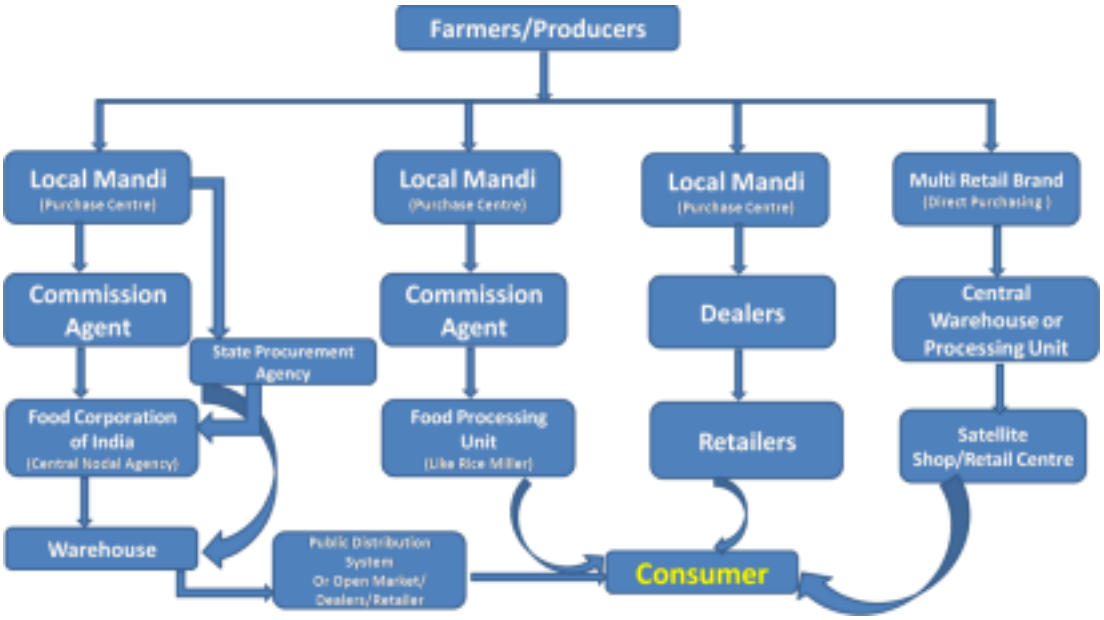
For Fruits, Potato, Onion, Green Pee etc. (Perishable goods) requires cold storage chain or consumed by consumers directly



For Fruits/Vegetables (Perishable goods) & daily consumed by consumers



For Food grain (Not Perishable goods)



As from the above chart it is clear that produce need to go throw several stages before reaching out to consumer. when it reached the consumer, it has gone several stages and through various vendors which incur cost and that cost puts more burden on the consumer.

As the process is time consuming it, so there is a possibility that the food quality may get degrade and not as fresh as it was during packing. so, to eradicate this problem we need to build the system such that there should not be any burden on consumer as well as the farmer, both the parties should get the desired product for appropriate price

With this the concept of supply chain comes known as Agri supply chain

INDIAN AGRI-SUPPLY CHAIN

When it comes to the procurement chain there are different models and they are connected as ‘farm-to-fork’ to get the best flow and efficiency of products targeted to consumers. Supply chains include various vendors or third parties such as who grows it, picks the materails, takes care of packaging, then the one who processes it,along with that we need to take care of Storaging-facilities and transportation promoters, retailers, retailers, exporting facility, distributing facilities, retailers so they can help many people from urban to rural areas. they are still developing. .

The supply chain can be divided into three main components such as the upstream, internal, and downstream supply chain.

River rise: - The main function of river uptake is where the supply chain includes the activities of first phase providers and related communications with their suppliers (secondary and third party providers).

Internal: - This process includes major processes, commonly used in converting immature items or inputs obtained from suppliers to related products. This model covers the range from the time the goods / inputs come in organization till products will be distributed.

Downstream: - This process covers major processes how the product be reached to consumer , takes care of delivering products. Oversee distribution, storage, transportation, and after-sales services.

Then the main function of Supply Chain Management is to planning, organizing, and coordinating the services of the supply chain. The concept of SupplyChainManagement has focused on how to manage complete systems throughout the supply chain.

COMPONENTS IN AGRI-SUPPLY-CHAIN

Agri-Supply chain managers manage the Link between process and direct effective producing to suppling the produce from the farmers to End consumers, for fulfilling the needs of consumers in terms of requirements and quality.

Agri-based Supply-chains to manage and distribute benefits and segregation

accidents between different groups. Therefore, supply chains perform internal processes and receive extensive support to ensure proper compliance of requirements and outcomes from the production line. Process is well-connected and well-connected due to shared information and deferral procedures, product and service guarantees, and pricing. This interaction between processes increases importance of produce from the agriculture and requires persons stakeholders to link their implementations to a sustainable development process. The total costs incurred in a single chain are linked to a series and are determined by the significant number of actions taken or not other chain links. Additional planning and integration is needed so that downsizing throughout the chain affects important processes for example predicting, purchasing planning, production and promotions along with processing, marketing promotion, and the introduction of upcoming markets and products etc.

The components of the Agri-supply chain are:

1. Purchase of goods or purchase of goods

2. Logistic management

a. Transportation

b. Property management

c on a supply basis mainly from production and not in stock

d. Storage of goods

e. network modelling-taking care of Logistics

3. management at organisation level

a. Contract

b. Building associations and relationships

c. Direct involvement

i. extended maintenance
ii. Packing measures

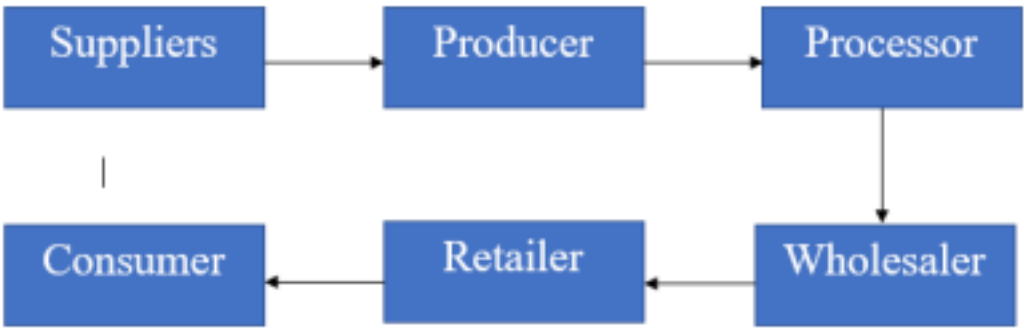
iii. well organised transport and more energy saving

iv. Standard and Well being

4. Implementation of an Effective Feedback-Response System

a. Proper network planning

SUPPLY CHAIN MODEL



With the presence of big retailers in the market the process is modernise and various unnecessary procedures has been removed from the process. In modern-day supply chain there is concept of direct from Farm in which retailer directed purchase the produce from the farm In such measure the farmer need not to worry about packaging transporting and paying commission for selling it in mandi rather the retailers directly purchase and all the process including packaging, transporting and warehousing are done by retailers.

Names of few big retailers are Bharti Enterprises, Reliance Fresh in India)

Supply Chain Analysis

Supply chain analysis mainly consists of key functions such as revenue, operational, selling and increasing-marketing, helping hands and other functions such as architecture, processes, techno-developed and effective staffing.

Major Supply Chain Analysis Tasks:
• Inbound Logistics
• Jobs Out
• Marketing and Sales Resources

Second Supply Chain Analysis Tasks
• Procurement of Infrastructure

• Technology Development
• Staff Development

Supportive Activities in Supply Chain Analysis

Infrastructure

The initial phase is setting up and investment in infrastructure and base of supply chain building networks, partners etc

Procurement

Purchase cycle of different products from pre-negotiated contacts.
Various products such as vegetables, fruits, dairy products, bakery items from farmers directly.
As the purchase is straightforward and therefore intermediate commissions, loading and unloading costs, travel and waste costs due to hand exchanges are eliminated. Certain products which have low shelf life are purchased from neighbouring centres distribution centers. Products which do not get spoil easily such as non-perishable are purchased within their sales departments.

Obtainment Policies and measures, Asset Management

Obtainment Policies:

- Consolidating purchases through a separate centre right away from the manufacturer's end.
- Distribute the process and classification based on the roles of employees such as SCM manager and phase manager where all sales will be provided.
- Utilizing technology where orderplacement are automatically executed when the inventory level reaches below the threshold.
- Having different people in a different role for quick testing.
- The person working as the phase manager receives an auto triggered notification which he then forward to the manager taking care of supply-chain aspects.

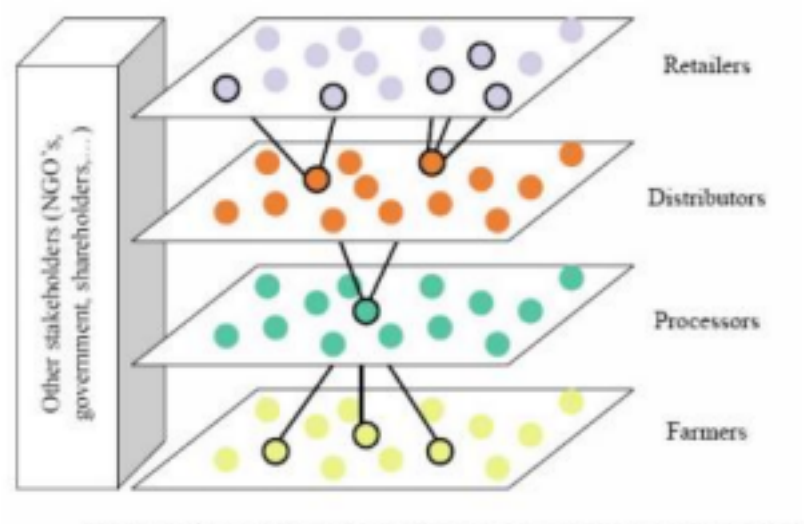
Inbound Logistics

The incoming work is overseen by the heads of the various divisional distribution centers with the task of selecting different categories of vegetables and fruits. These people have a level of expertise in purchasing and selecting items that meet quality standards. Following the completion of the procurement phase, the transit stage from Distribution Centers to Retail Centers is contracted.
When the product reaches the exit point, the product is assembled and given the correct location. Perishable products are stored in chiller with Maintained cooling regulation. Appropriate size, designed specifically for anti-bacterial steel crates used to store vegetables and fruits. The test is performed weekly under the presence of person taking care of Hygiene.

Store Operations

Products are evaluated appropriately and timely by management. The housekeeping teams regularly participate in cleaning and cleaning minimum seven to eight times a day. The refrigerator and temperature are examined always by the person managing the store. Along with this the next day's product indent is prepared by the person managing the store .And At last the ending inventory is monitored also additional information is forwarded to the head office by the manager.

SUPPLY CHAIN FLOWS



Schematic diagram of a supply chain from the perspective of the processor (bold flows) within the total FSCN (based on Lazzarini et al. 2001)

Fig- 1: Schematic Diagram of Supply Chain

How farm product reaches consumer in supply chain

Coordinating all the supply chains flows are necessary among the parties for supply chain. And These flows can be categories in three types: materials, information, and money.

Material flows: Can be referred as raw material supplies that flow along the chain and flows includes both reverse as well these counter-flow constitute— products which arereturnedrecycledanddisposal of goods. Includes a product lifeprocessapproach, from "dirt to dust."

Information flow: Contains fact-stats processing methods linked to info gathering by demand, shippments, Nooforders, replace, plan, and substituting the facts-figures. Along with this it includes Responses, ideas from provider to producers and more.

Financial flows: This talks about processes relating to money like clearance, discharge.

SUPPLY CHAIN MANAGEMENT AND BENEFITS

Managements in supply chains often needs an integrated and holistic measure through which different parties under SCM matrix plan jointly and also manages how the process and cource of the goods, data, techno-Driven approach and funding from provider to consumer of consumer goods. buyers and the opposite is possible.

To manage and provide effective and efficient services according to customer needs, the SCM approach is primarily referred to and is considered customer-focused. The main purpose is to coordinate production processes. SCM results in reduced production expenses resulting in grow of genetics. Due to the multiple functions-features present, the process requires a different measure to builds long-term trading relationships.Partnerships in SCM are done on the basis of belief also the complementary sake is also involved.

Other Main Profit areas are:

1. Reduce product loss due to shipping and storage.

2. Increased sales.

3. Distribution of technology, advanced strategies, funding and information among series partners.

4. Develop awareness of SCM flow of products, markets and technologies.

5. Transparency in the whole process.

6. Easy tracking and source tracking.

7. Better product safety and quality control.

8. Distribution of investment and risk among partners in this series

ISSUES /DISADVANTAGES IN SUPPLY CHAIN MANAGEMENT

• No proper infrastructure

• No organized logistics

• Lack of adequate warehouses

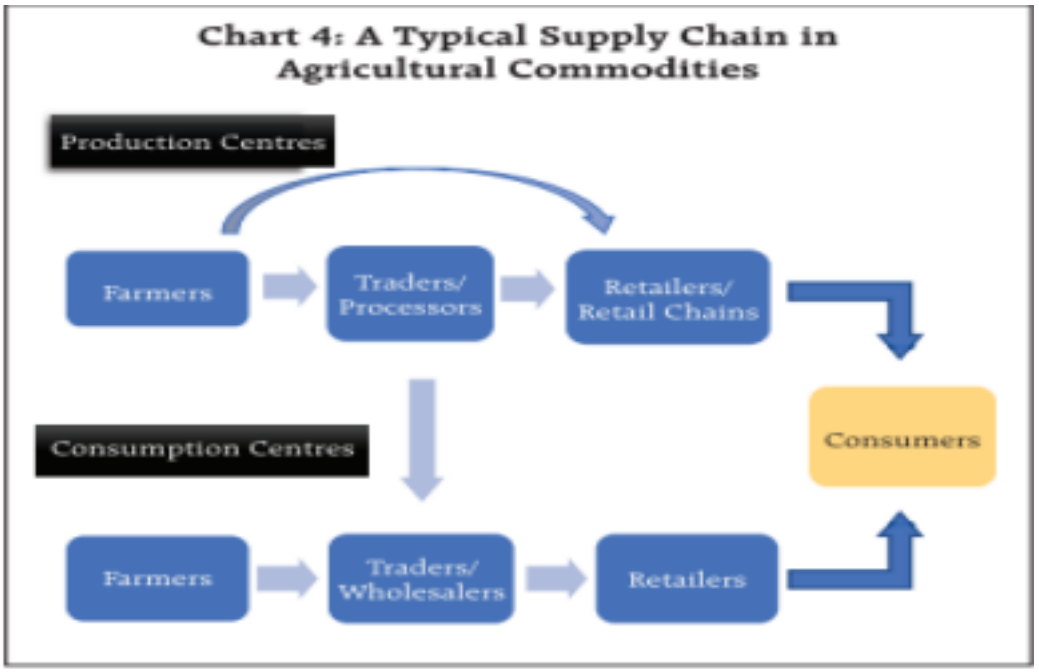
• Less facility of Sheltered warehouse

• less facilities of cold storage

• financial issue

• Accessibility to Market
• No Proper system integration

BUILDING AN EFFICIENT SUPPLY CHAIN



Building an efficient supply chain involves setting up various middle pointy or vendors or removing the unnecessary time taking process which includes heavy cost

In this the proposed setup will be: We should increase the factor of 3rd. party and 4th party

Initial Phase /Procurement

After the harvesting is completed, the farmer should initiate the process by calling the vendors to do the quality check for the produce at farmer's place

Upon the quality check-up of the produce and amount / payment should be initiated based on quality check a rating

Quality check officers should have tie-ups with logistic firm which will do the shipment of the produce to their warehouse

And through the logistic the company can do the shipment to its various warehouses and from the product may be supplied the different companies as raw material or to the retailer for consumers.

MODERNISING SUPPLY CHAIN THROUGH BLOCK CHAIN TECHNOLOGY

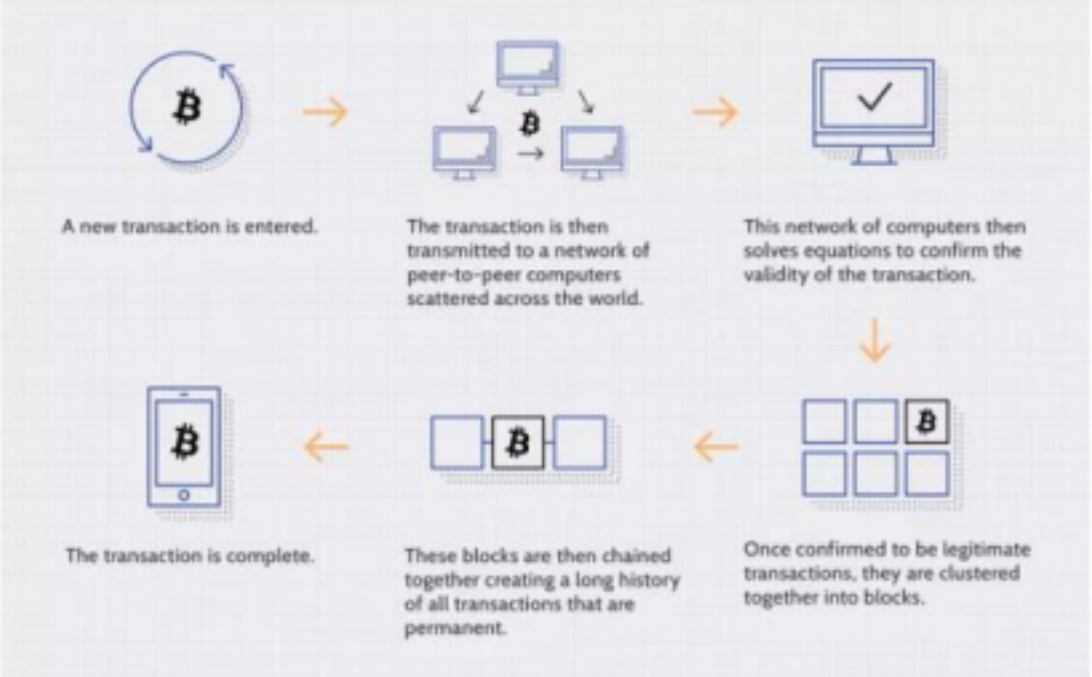
BLOCKCHAIN

- We can understand Blockchain as type shared database that differs in way the data is stored in it. As its name symbolises it store data in small blocks that are linked together.
- Whenever new data is entered, it comes into fresh block and once the block is filled it then moves to second block and follows a chain in chronological order. • We can store different variety of information inside a blockchain, a ledger for transactions being the most common of all.

How IT WILL WORK

When we talk about a Agri-supply chain, it generally contains multiple levels of process and transactions, having different policies and conditions at various stages.

In supply chain model various systems having varied characteristics and relative functions are put together be it food-processing, transportation, storage, and distributors and in all these stages there is a need to maintain a proper details of all the products from the procurement stage to packaging, transportation to storage, and distribution, which are usually long and complex.
Implementing proper technology will definitely help us in simplifying the whole process at the same time increasing the transparency in and out of the supply chain. Hence Implementing blockchain technology will enables us or various people working in SCM to track of the location of their goods, inventories, and various process where the ownership rights are transferred across the supply chain. This will intern helps various organisations to prepare well for any sort disruption in the markets. Along with this it will enable organizations and partners as well as the customers-base to determine the quality of the food products by tracing back all the information.
Figure representing the transaction process in Block Chain



Steps Involved in Block Chain are:

- New transaction Entered
- Transaction transmitted to a network and scattered
- Network checks the transaction and confirm the validity
- After receiving confirmation, they are processed and clustered into blocks • In this process the small chunks of block are collected and chained forming a history details every transaction process that are persistent
- Process is completed

IMPLEMENTING BLOCK-CHAIN TECHNOLOGY

An Agro based supply-chain includes a typical interconnection between different members and parties like supplier, manufacturer, planning phase, organising before it reaches consumer siting another corner of global

There are quite few challenges in present supply chain because of which there is need for the introduction of Block chain technology

- Importer find it difficult to find the origin of quality of imported produce as it transfers very frequent and transfer of ownership of the custodian becomes difficult to trace
- Agency which checks and gives certificate for crop could not be considered by others
- Transfer of info-Data between stakeholder usually sequential resulting delay in settlements
- Transparency and unable to track transactions

And to find the solution we have a concept of block chain technology through this any documentary and logically legered and stored and distributed among all the participant stakeholders thus making it more trusted also the entrusted stakeholder has transaction between them through smart transaction and can have their own copy of information ledger

STAGES AND STEPS INVOLVED IN BLOCK CHAIN

Every year farmer sells his product to manufacture and manufacturer receives order process it and send the product to different region as per requirements.

Below are the steps to initiate the process

✓ Once the crop is ready to be harvested the Farmer will update the details about his

produce/crops and request inspection and get his product insured at the right time

✓ Contract between farmer and manufacturer is stored on their block chain network as smart contract

✓ Relevant stakeholders will visit and certify the produce with standard certificate

✓ Once the crop is harvested, farmer generate the invoice and request for the pickup

✓ Logistic company will pick the produce from farmer's place and deliver to manufacturer, the delivery receipt is updated and made available to all stakeholders

✓ Once the manufacturer accepts the consignment the smart contract between farmer and manufacture is executed and manufacturer bank will be notified to initiate the open account transfer to farmer bank account and transaction details will be updated on block chain network

✓ Meanwhile the manufacture takes farm produce as raw material and prepare a product which is raw material for the importer

✓ The material from manufacturer is inspected and certified

✓ Manufacturer issue the invoice of the product to the importer

✓ Importer tracks the details of the product entirely, how the product were cultivated and do the inspections of the details before accepting the invoice

✓ Manufacturer then raises the shipment contract with shipment company / logistic

✓ Once the bill is uploaded by transfer/delivery company then smart contract between, manufacturer and importer are executed

✓ And importer bank initiate payment to manufacturer bank

✓ Transaction details ids uploaded in block chain network

✓ Importer sitting in in remote location can track details of the product

CONCLUSION

Major issue in the Agri supply chain is the continuous and multi-flow of agricultural produce. It is observed that there is an irregularity in the flow of Agri-produced is caused due to poor harvest techniques or a sudden increase in demand for a particular product caused by the sudden change in climatic conditions.

The developed model thus results in, planning a farm model from harvesting till reaching the consumer. It is observed that the type of transportation network to access and packaging of the Agri product also depends on the distance of the marketplace from the point of production. The distance between the farm and distribution centres often plays a important role in determining the market price of the produce. Thus, the model will enable us to determine the type of transportation, packaging, and storage facilities to be availed by farmers to minimize the farm cost. However, the model focuses only the management of perishable product, the study can be further extended to inculcate both perishable and non perishable products simultaneously.

We can understand from the Project report that the integration of blockchain, AI, and IoT in agriculture can be still considered as implementation stage as the existing scenario mainly constitutes assumptions and pre-considered studies with little accurate systems procured and its implementation in agriculture sector still has a prototype level. Pushed by the solutions Block technology are offering such as reliability, transparency, security and effective decision support systems for all supply chain management operations, the report shows Agri-Supply Chain Management -Block Chain architecture to look into and solve various issue pertaining to storage and scalability, optimization, make use of information, security and privacy issues, and with existing single-chain agriculture supply chain systems.

As it includes various key players at different levels and diverse parties it mandatory to process and develop a trustworthy blockchain-based system. Implementation should be such that it should ensure that it should be resource-efficient, appropriate, less-complex, provide exchange and make use of information