

Empowering Farmers in a Digital Economy with Cryptocurrency

i Introduction

India is one of world's largest agri economy.

- ▶ 58 per cent of the rural households engaged in agriculture or related professions
- ▶ 17.3% of GDP comes from agri.
- ▶ Estimated at Rs 1.11 trillion (US\$ 1,640 billion)

To ensure fair prices to farmers and also to safeguard them from commercial malpractices the govt of India started to regulate agri markets through APMC's (Agricultural Produce Market Committee's).



Although the sale is regulated for the farmers benefit, the transactions are still mostly manual. There is no digitization and hence all the associated demerits such as delays in transactions, reconciliations, lack of data for analytics etc abound.



Customer

The client is a NBFC focused on providing microfinance with farmers and other agri related activities



Requirement

Client wanted to develop a system to become a digital enabler by creating a digital platform to manage day to day transactions at the market level that will ensure

- ▶ Instant gratification to all the stake holders.
- ▶ Negate need for signoffs for the supporting people like coolies, weigh bridges, truckers, TPA's etc as their stake is just a calculated number based on qty and value of produce
- ▶ Generate insightful data on commodities and pricing trends
- ▶ Facilitate digital payments
- ▶ Establish own crypto currency



Challenges

Due to manual mode of transactions systemization cannot be done.

Pre information about produce is not available until it hits the market which may spell disaster to farmers.

Requires capturing same data multiple times.

Fewer options hence farmers loose revenue



Solution

Built a market place (commodity trading platform) on a blockchain architecture with smart contracts that helps in digitizing the data capture.

A smart contract mechanism to trigger all dependent transactions.

Stakeholder Analysis

- ▶ Farmer – Produce grower. The broker pays to farmer for the bid value after deducting any applicable overheads like transport, porter etc
- ▶ Auctioneer / Broker – Licensed agency that conducts auctions. They would earn a few percent points of the deal for their work.
- ▶ Buyer – Licensed trader who buys produce in the market.
- ▶ Transporter – In most transactions the transportation charges are deducted from the farmer's payment by the broker.
- ▶ Coolies / porters – These are licensed people who are paid based on quantity moved by them. Either weight based or container based rates apply. Since APMC is regulated by government any lifting / shifting labor work is done by these licensed people who are members of the local labour union.
- ▶ Weighing scale
- ▶ TPA's – They arbitrate for quality matters as

the rate depends on quality of goods.

The eco system

- ▶ CMS and Admin
- ▶ Farmer App
- ▶ Broker App
- ▶ Buyer App

The Smart contract

A smart contract is implemented with option to use own crypto currency. The triggers

- ▶ Auction is registered by the Broker
- ▶ Weighing scale operator confirms weight/qty
- ▶ TPA confirms quality
- ▶ Seller (Farmer) triggers acceptance of deal
- ▶ The buyer triggers his acceptance

The contract is deemed to be executed and following accounting entries are booked.

- ▶ Debit the deal amount payable to farmer
- ▶ Credit farmers account deductible for transport charges applicable
- ▶ Credit deal amount to buyer
- ▶ Credit the overheads to buyer on account of brokerage, porter charges, weighing scale charges, TPA charges
- ▶ Debit respective amounts to the accounts payable of Porter, transporter, weighing scale and TPA organizations.

Crypto Currency

The system requires facilities of payments also but to connect all various electronic means and enabling all stake holders to connect is a big challenge.

To facilitate this a crypto currency is also part of the system. All the Dr/Cr are effected to respective stake holders accounts.

They in turn can choose to use it on this platform for further transactions or can choose to convert it to real currency.



Benefits

- ▶ Eliminates any post processing
- ▶ Simple and instant accounting
- ▶ Confirmed payment since backed by a NBFC.
- ▶ generation of critical data on commodity, qty, quality, min/max and modal prices
- ▶ A multitenant architecture facilitates aggregation of data in a tiered / tree structure. City, region, district, state and country.
- ▶ Farmer rating can be done
- ▶ Once farmers starts filling data before coming to market they can have insights on total inwards
- ▶ Farmers and buyers can see price trends and analytics

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