



**SYSTEM REQUIREMENT SPECIFICATION**  
**“MARKET YARD MANAGEMENT SYSTEM”**

**COURSE:**

**IT 314 : Software Engineering**

**GROUP: 5.13**

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# 1 Requirement Collection

## 1.1 Background Reading

### 1.1.1 Buying and Selling

The farmers bring their produce to sell it to the wholesale vendors and they in turn sell it to other smaller retail vendors. Apart from these three entities there are consumers (customers). They do not buy from the farmers directly but they buy from the wholesalers and the retailers.

There are various transactions that take place in these markets. A proper management of all the transactions has to be maintained. The main transactions involve:

- 1) **Inventory Management:** The stock of the amount of goods that come and go from a market need to be maintained. For this purpose , a register has to be maintained for all goods. Each commodity has entries against it about who bought or sold that goods and in what quantity and what price.
- 2) **Price Changes:** No commodity stays at a fixed price. There are continuous changes in the prices and they need to be reflected. The prices have to be updated at the Mandi. The placement of this board/chart should be such that everyone is able to read it.
- 3) **Invoice generation for the sale (for each different entity):** After the sale, the farmer and the trader need to be given invoices of their transaction. This serves as the proof for transaction in case of any future conflicts.
- 4) **Maintain Account of each farmer and trader:** It is also beneficial to have a database of each and every farmer and vendor. This helps in maintaining proper accounts for each entity.
- 5) **Commodity In – Out Data:** Similar to inventory management. But this is for a smaller transactions when a consumer buys from the wholesaler or retailer.

### 1.1.2 Auction

The other type of transaction is of a bidding type. Here, the farmers showcase their goods to the wholesale vendors and they in place put a bid for that commodity, the person with the highest bid will get the order and he would buy those goods.

With an online auction system in place there would be more transparency in the dealings. The farmers would be getting the amount directly from the traders which can reduce the need of the middle men in the process. It has been found out that these intermediaries which take commission from both the parties for the deal eat up a lot of money in the between which increases the commodity price and also leaves the farmer with very less money for his product.

The auction system needs to have the following stages:

- 1) **Gate Entry:** This is done when the commodity comes in the market. It has to be documented in terms of quantity, quality, farmer, proposed price, etc.
- 2) **Quote Entry:** The quotes should be added to the system according to what the farmer/selling party proposes.
- 3) **Cess Assessment:** There is a certain tax that is applied by the government on the person who grows that crop. Once the auction is completed the cess is calculated and the transaction is completed.
- 4) **Farmer and Buyer Receipt:** The seller and buyer would require the proof of the completed transaction That needs to be provided to them once this process is completed.
- 5) **Delivery of Goods:** Once the sale is completed the delivery of the products is done.

## 1.2 Interviews

### 1.2.1 APMC Market, Ahmedabad

- **Participant :** Mr. Dipak Patel (Secretary)
- **Date :** 27th January, 2017
- **Time :** 9 a.m.
- **Duration :** 15-20 mins
- **Place :** APMC Market, Ahmedabad
- **Contact Details :** +91-9328376803

#### **Purpose of the interview :**

- Preliminary meeting to get an insight of the working of the Mandi system.

#### **Agenda :**

- Working of the Mandi and all the functionalities involved
- Problems with the current procedure of buying and selling of the goods
- Problems with the current procedure of auctioning of the goods
- Number of people associated with the Mandi on a daily basis
- Improvements to the current system that could be added
- Loss/Profit on government side for running the Mandi

#### **Summary of the Interview:**

- The Mandi is managed by a board. For each region or Mandi there would be a board that will be overlooking the working of the interview.
- The farmer brings the goods in, hands over to a middleman and then this person helps him to sell it. **An important point to take into consideration is, taking commission from farmers is banned and hence these middlemen take commission from the buyers/traders.** After the sale, they get a fixed percentage and above that there is a market fee to be paid by the buyer.

- There is as such no problem that is being faced by the people be it the farmers, traders or Mandi heads. Each and every person is guided by certain rules and regulations and all follow them. There isn't much interference from our side towards the functioning. The auctioning process isn't an issue.
- The number of people associated with the Mandi vary. All those who want to trade in a particular Mandi need to be registered with the board. Apart from that there isn't any fixed number of people who would be associated with the Mandi on a daily basis.
- Technology has penetrated the Mandi System at a very significant scale. Today, all the accounts and stocks are being done using the computers and softwares available. The Mandi management uses Whatsapp to send prices of the commodities to the traders. Farmers use WhatsApp to send pictures of the lot to the traders and to communicate with them.
- The current system is very much accepted by all the entities. We don't need to change anything.

### 1.2.2 Padra Market, Vadodara

- **Participant :** Mr. Yatin (Trader)
- **Date :** 30th January, 2017
- **Time :** 7 p.m.
- **Duration :** 15-20 mins
- **Place :** Vadodara (Interview done on call)
- **Contact Details :** +91-9898387589

#### **Purpose of the interview :**

- Preliminary meeting to get a trader's insight of the Mandi system.

#### **Agenda :**

- Working of the Mandi and all the functionalities involved
- Problems with the current procedure of buying and selling of the goods
- Problems with the current procedure of auctioning of the goods
- Improvements to the current system that could be added

## Summary of the Interview:

- The Mandi has various entities. The main entities involved (removing the labourers, clerks, etc. ) are:
  - Farmers (who bring their goods)
  - Dalal (Middle men who are instrumental in any deals, they too are officially recognised by the Mandi)
  - Traders (these include the wholesale and retail traders who would buy goods and take part in auctions)
  - Mandi Board (the people managing the Mandi i.e. the administrative staff)
- For the auction, there is not much of a bidding type process, it's more like a bargain between the buyer and the farmer. The farmer brings in the goods and quotes a price for that. The buyer and farmer settle for a price after a little bargaining. The first person who settles for a price suitable to the farmer gets the lot.
- There are various products in the Mandi, each and every vegetable and grain have various variants. Documenting each and every type is exhaustive but it isn't feasible.
- Mandi business and buying and selling of such **“perishable products”** is a business run on trust. Trust between the buying party and the selling party. Until and unless there is physical involvement involved the transaction can't take place. Even on the basis of how a person describes his crops the buyer would know whether to buy or not. The traders would not buy any stuff from the farmers without physical testing. Online Auction and buying large lots online isn't possible.
- The only option that can have transaction online is for small quantities i.e. from wholesaler or retailer to the customer.
- Online functionality should be given for the following only:
  - Accounts
  - Stock Management
  - Price Variations
- Apart from these, any other functionality related to buying or selling would be a useless effort because it wouldn't be used by the target audience.

## 1.3 Questionnaire

### **Market Yard Management System**

(Designing an online platform for the Mandi System in India)

#### 1.3.1 Questionnaire for Farmers (Input)

- 1) Do you visit the Mandi for buying/selling your product?
  - a) Yes
  - b) No
- 2) How many times do you visit a Mandi?
  - a) For every crop
  - b) Twice a Year
  - c) Not fixed
- 3) Are you satisfied with the current system in place?
  - a) Yes
  - b) No
  - c) Maybe
- 4) Do you get proper price and payment of your goods on time?
  - a) Yes
  - b) No
  - c) Sometimes there are problems
- 5) Do you use a phone or computer?
  - a) Yes
  - b) No
- 6) Is there a computer which you can use in your village?
  - a) Yes
  - b) No
  - c) Doesn't Work
- 7) Are you aware of e-Chaupal initiative? Is there any karamchari for this purpose?
  - a) Yes
  - b) No



- 8) Do you have a bank account?
  - a) Yes
  - b) No
- 9) Would you be willing to operate all this from your home via a computer or phone instead of coming here?
  - a) Yes
  - b) No
  - c) Not sure
- 10) What changes do you think should be brought in the way Mandi is operated?  
(open ended)
- 11) If online system is implemented and is beneficial to you and helps you in getting more money, would you shift to it and why? (open ended)

### 1.3.2 Questionnaire for Farmers (Output)

Location: Lilapur Village and APMC Market

Number of People: 10 (total)

- 1) Do you visit the Mandi for buying/selling your product?**
  - a) Majority of the farmers visit the Mandi for selling of their goods. They are well acquainted with the procedures of the Mandi.
- 2) How many times do you visit a Mandi?**
  - a) The number of times depends on the quantity of the crop produced. If it is excessive and is of good quality which can be sold, they go to the markets.
- 3) Are you satisfied with the current system in place?**
  - a) Yes, all were satisfied with the current system. No one had any complaints regarding the system.
- 4) Do you get proper price and payment of your goods on time?**
  - a) Sometimes there are delays but we get full payments for our crops and goods.
- 5) Do you use a phone or computer?**
  - a) Yes. (7/10 people used smartphones. For the rest 3, if not them, their children knew how to use a phone)

- 6) **Is there a computer which you can use in your village?**
  - a) There is a village VCE(Village Computer Entrepreneur) in our village who helps us with any computer related stuff.
- 7) **Are you aware of e-Chaupal initiative? Is there any karamchari for this purpose?**
  - a) 4/10 farmers knew about this initiative.
- 8) **Do you have a bank account?**
  - a) Yes. All of them had an active banking account.
- 9) **Would you be willing to operate all this from your home via a computer or phone instead of coming here?**
  - a) No, we would not like that thing. We need to interact with the traders, make deals and bargain. Without human contact buying and selling for such large quantities isn't possible.
- 10) **What changes do you think should be brought in the way Mandi is operated? (open ended)**
  - a) Not many people were able to answer this question because they were happy with the current system in place.
- 12) **If online system is implemented and is beneficial to you and helps you in getting more money, would you shift to it and why? (open ended)**
  - a) Not sure. We would like to stick to the current system that is tried and tested.

### 1.3.3 Questionnaire for Consumers (Input)

- 1) Would you be interested in buying grains and vegetables directly from wholesale/retail sellers from the Mandi?
  - a) Yes
  - b) No
- 2) How comfortable are you to buy online? Any specific reason for your answer? (open ended)
- 3) If not a regular user, would you be interested in buying grains and vegetables directly from wholesale/retail sellers from the Mandi?
  - a) Yes

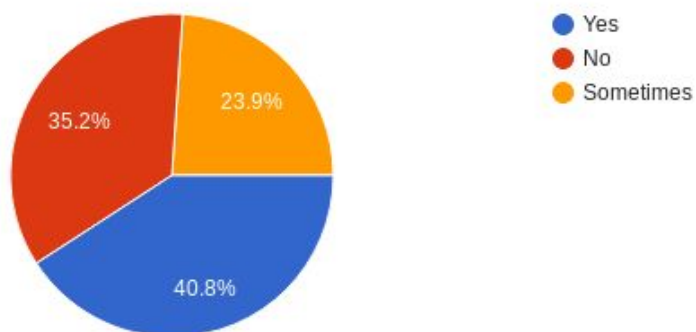
- b) No
- c) May be
- 4) Would you use an online portal for buying grains and vegetables?
  - a) Yes
  - b) No
  - c) Not sure
- 5) What functionalities do you expect from the platform?
  - a) Digitized Payment
  - b) Price Notification
  - c) Bargain Feature where you can bargain online for good
  - d) Cheaper Price / Discounts
  - e) Home Delivery
- 6) What problems do you face while purchasing goods online?
  - a) Delay in delivery
  - b) Unexpected Quantity
  - c) Damaged Product(Quality of product)
- 7) What other functionalities would you expect from the system?(*open ended*)

#### 1.3.4 Questionnaire for Consumers (Output)

Question 1:

**Do you use the Mandi on a regular basis for buying of food grains and vegetables?**

71 responses



Question 2:

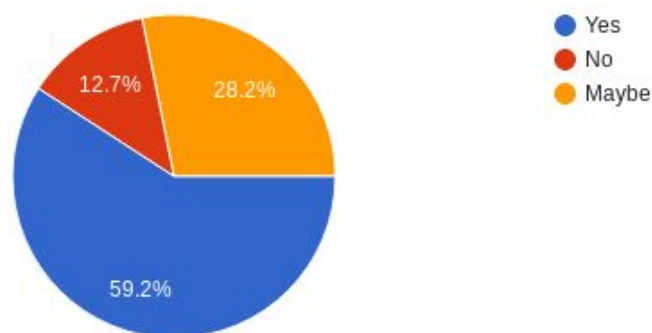
**How comfortable are you to buy online? Any specific reason for your answer?**

- a) As seen from the previous graph, not many consumers use mandi on a regular basis. The main reason for this being the quality of products as all these products like grains, fruits, vegetables, etc. need to be checked before buying.

Question 3:

**If not a regular user, would you be interested in buying grains and vegetables directly from wholesale/retail sellers from the Mandi?**

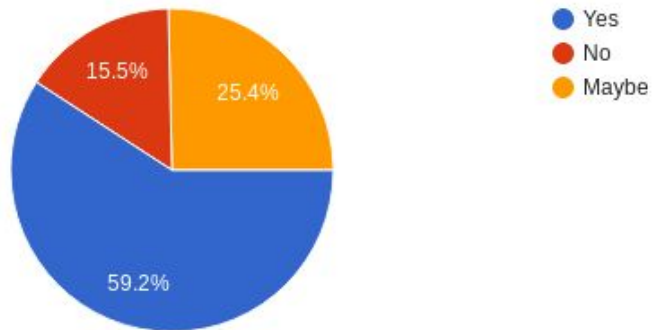
71 responses



Question 4:

## Would you like to use an online portal for buying grains and vegetables?

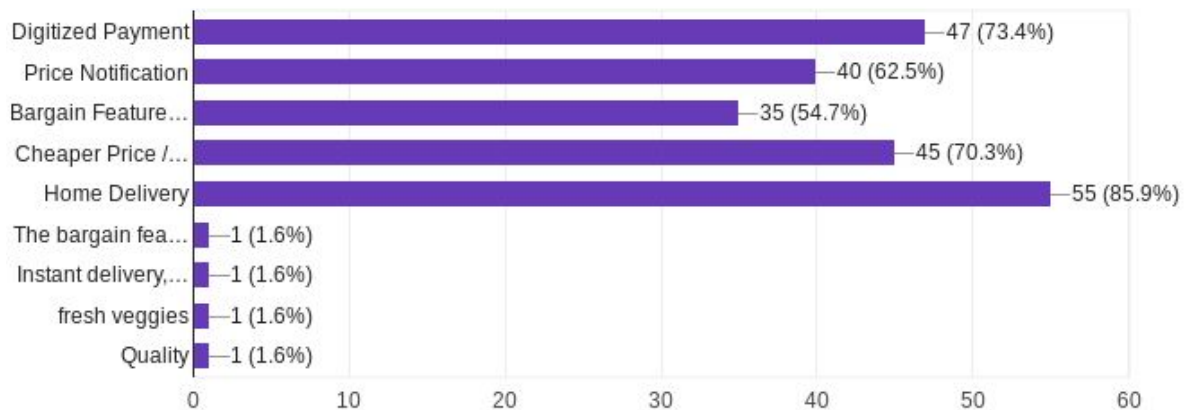
71 responses



### Question 5:

## What functionalities do you expect from the platform?

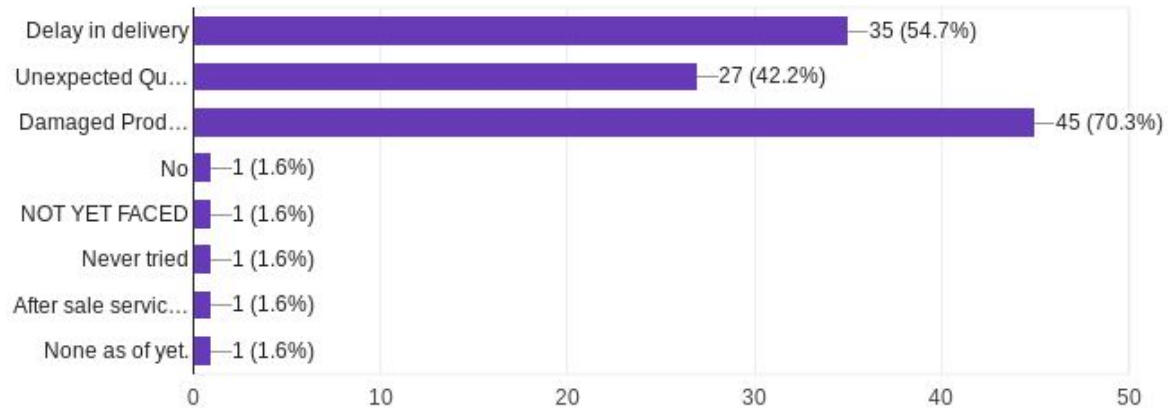
64 responses



### Question 6:

## What problems do you face while purchasing goods online?

64 responses



Question 7:

### What other functionalities would you expect from the system?(open ended)

- a) People were ready to shift to the online madi system for buying and selling of items, given certain functionalities. Home delivery, digitized payments, discounted rates and quality control were among the top few features that the consumer wanted.

## 1.4 Observations

### **INPUT**

- Visit to APMC Market in Ahmedabad
- Videos in which people from various categories are being interviewed

### **AIM**

- To understand the daily functions of the Mandi
- How are the entities associated, interacting with each other

- What are the requirements that the online system should have in addition to replicate the process of the physical Mandi
- If shifted to the e-Mandis would everyone be able to get the benefit out of this system

## OUTPUT

- The Mandis start operating in the morning with the farmers coming in with their goods. These goods are registered with the Mandis and one specific person is assigned to the farmer. This person has the responsibility for selling of that particular stock of goods.
- Each farmer and trader has to be registered with the mandi registry if he wants to trade in that particular mandi.
- The traders buy from the designated person. For each transaction, the purchaser has to pay 7% to the middle man and 1% as the market fee.
- For the auction, the farmer who brings in the goods fixes the price which is bargained upon by various traders. After a reasonable price is fix between the two, a deal is made.
- The accounts and stock of the mandi as well as each and every entity associated with the mandi is maintained through different means which include pen & paper as well as softwares.
- The traders are informed about the prices of different goods through messages or WhatsApp groups.
- Shifting the auction process to online medium isn't a good option because many people aren't interested in that type of system.
- The people were more interested in a platform where the accounts and stocks are maintained universally and they get a proper continuous update for price fluctuations of various commodities.

## 2 Fact Finding Techniques

Objectives	Technique	Subject(s)	Time Commitment
To get background on the current system and mandis	Background Reading	Mandi's previous trading report	1.5 hours
To establish business objectives(Auctions or simple trading)	Interviews	Wholesalers ,retailers and farmers	40 minutes



To follow up the development of mandi/market	Observations	Farmers' Market	30 minutes
To gain understanding the roles of different categories of workers, Check out the market /mandi management	Interviews/Questionnaires	Mandi Head/Contractors	15 minutes
To find out how the trading in core of mandi operates(Auctions between Farmers and vendors)	Interview/Questionnaires	Trader	15 minutes
To determine the relationship between farmers,wholesalers, retailers,consumers	Interview/Questionnaires	One Employee from each category	10 minutes

### 3 Requirements

- **Registration:** Farmer, vendors and customers have to register in the system for availing the services.
- **Login:** Everyone needs to login with their unique user id and password so that they can access the features of the platform that are meant for them.
- **Database for the portal:** A database of all the vendors and farmers associated with the portal would need to be maintained. Every entity logged in the system will have his details stored in the database. These details when retrieved will help in transactions and maintaining accounts of each farmer.

- **Bank details** :Bank account details are included in order to carry on the transactions efficiently.
- **Information about the various crops and commodities**: There are various crops coming in and out of the Mandi. The traders need to be made aware of the rates of these commodities and also the quantity that has come in.
- **Online Marketplace**: The transaction of the Mandi System currently in place would be shifted to the online medium. The buying and selling part would be converted to a proposed e-Commerce website with a better interface than the other systems in place.
- **Stock Maintenance**: We need to maintain the stocks for all commodities. This would include the incoming and outgoing quantity of goods.
- **Price Fluctuation notifications**: Price increase and decrease notifications should be sent to the farmers and vendors so that they can plan their purchases accordingly. Current price trends and figures should be available on the portal for all the goods. The graphs of all the commodities available in the Mandis would be available to everyone.
- **Invoice Generation**: Invoice management and customer management should also be available.
- **\*\*Auction**: This requirement was removed from the system at a later stage because it was realized that people won't be using the online platform for auction as physical presence was required.

## 4 User Categories

The farmers' market has five user categories:

- **Mandi Admin / Mandi Board**
- **Farmers**
- **Big Vendors (Referred as wholesalers)**
- **Small Vendors (Referred as Retailers)**

- **Customer(Buys in small quantities)**

#### 4.1 Privileges

- **Mandi Admin**

- It gets access to a proper database of each user registered in the system. This database consists of personal details of the user, bank account details, land related information and any necessary documents.
- Allowed to add/remove farmers and traders from the system.
- Can see the daily transactions that occur in the Mandi i.e. get a log of all the transactions that are happening in the Mandi.
- Generate the receipts for the transactions that take place. In case of auctions it can be the mediator in such cases.

- **Farmers**

- Can register in the system and update their own details.
- Accounts show their past and current transactions and if they have any dues then those would also be shown.
- If any registration process requires sharing of identity proof documents then they can upload them securely.
- Sell their goods to wholesalers and retailers. Hence, can showcase their products online for sale. They can add details about the commodity that they have brought for sale.
- Demand the payment of the commodities that they have sold
- Can be a part of the selling party of the auctions and also take part in e-Auctions

- **Big Vendors**

- Can register in the system and update their own details.
- Can sell their goods to retailers and customers.
- Can showcase their products online for sale. They can add details about the commodity that they have for sale
- Pay for the goods (Commodities) that they have bought
- Can buy goods on credit to their account
- Can take part in the e-Auctions as the buying party

- **Small Vendors**

- Can register in the system and update their own details.
- Can Sell their goods to customers
- Pay for the goods (Commodities) that they have bought
- Can buy goods on credit to their account
- Can take part in the e-Auctions

- **Customer**

- Register themselves and add details about themselves to the platform.
- Buy from the wholesalers and retailers

## 5 Assumptions

- ➔ All the entities involved should be ready to accept the change and all the issues that may crop up in the initial stages.
- ➔ All the entities need to have a computer system and internet connection. If not at every home but for every village there needs to be such an arrangement in place.
- ➔ The people in this ecosystem should have the basic knowledge of operating this thing. If there is a terminal for every village then there should be a person who operates the portal and is experienced with it.