

UNVEILING THE PRICE PARADOX: EXPLORING DISPARITIES IN VEGETABLE PRICING

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Abstract:

Analytical research on secondary data of five vegetables viz. Onion, Garlic, Ginger, Potato, and Green chilly have been conducted using the wholesale and retail prices. There is a significant gap between wholesale and retail prices of agricultural commodities that negatively affects farmer incomes and the overall stability of a sector—price disparities ranging from 60% to 100% challenge the agricultural market. A descriptive study comparing wholesale prices from the APMC office and retail prices highlights the disparity and proposes a startup model as a potential solution. Farmers earn less from wholesale prices than retailers, resulting in limited profits. Implementing the startup model could help address these challenges and improve farmer livelihoods.

Keywords: Price Disparity, Wholesale Prices, Retail Prices, Vegetable pricing, Farmers, Consumers.

1. Introduction:

India's economy depends heavily on agriculture, with farmers producing over half of the country's goods. Agricultural markets play a crucial role in connecting farmers to other sectors, offering trade opportunities and income boosts. Price disparities in the agricultural sector involve different pricing for the same product, affecting stakeholders like farmers and consumers. Understanding these dynamics is essential for decision-making and resilience. Collaborative efforts are needed to create a stable and sustainable agricultural market ecosystem in India. This article delves into the intricacies of wholesale and retail price disparity in agricultural markets, shedding light on their unique dynamics and the implications they bear on the various players in the supply chain.

2. Research Problem:

Excessive price disparity in agricultural commodities negatively impacts consumers, farmers, and the agricultural sector. A 60% to 100% price gap between wholesale and retail prices leads to financial uncertainty, as farmers are unsure of their income. This uncertainty makes it hard for farmers to make informed decisions about crop production and sales such as which crops to grow, how much to produce, and when to sell their produce.

3. Review of Literature:

Seasonal production, weather abnormalities, and high perishability introduce a high degree of disparity in potato prices. Researchers have attempted to make a model for the price volatility of the weekly wholesale modal price of potatoes for the Agra, Ahmadabad, Bangalore, Delhi, Kolkata, and Mumbai markets using the GARCH, EGARCH, APARCH, and GJR-GARCH models. The News Impact Curves (NICS) are derived from the fitted models, which confirmed the presence of asymmetry in the price volatility Debopam Rakshit, Ranjit Kumar Paul, Md Yeasin, Walid Emam, Yusra Tashkandy, Christophe Chesneau (2023).

Kerala is second in terms of production of Areca nut, in recent years farmers in Kerala have shifted from recent cultivation to other crops because of price fluctuations and climate change.

Kiran M Sabu, TK Manoj Kumar (2020) reveals that the volatile prices of agricultural commodities from 2007 to 2017 impacted the overall agricultural factors. Farmers get affected financially due to large volatility between the prices of agro commodities. The volatility affects the factors from production to consumption and it influences the producers and consumers in the negative ways

4. Research Methodology:

The present descriptive study aims to analyze price uncertainties to find out price gaps between wholesale and retail prices of vegetables in the market and propose solutions to address agricultural commodity price disparities. Secondary data of wholesale prices of Onion, Potato, Garlic, Ginger, and Green Chilly have been taken for study from April 2021 – November 2023.

5. Data Analysis and Interpretation:

The data on prices of selected commodities collected from the APMC market from April 2021 to November 2023 have been presented below. Analysis of Onion Prices

(Figures per quintal are in Indian rupees)

Sr. No.	Months	Average APMC rate (per quintal)	Commission and APMC cess for wholesaler (7.25%)	Other Expenses (Transport, Hamali, etc) of wholesaler (0.25%)	Wholeseller's Profit Margin (Varies 10% - 40%)	Average selling rate of wholesaler (retailer's purchase rate)	Commission for retailer (10%)	Other Expenses of Retailer (0.30%)	Retailer's profit margin (Varies 10% - 40%)	Average selling rate of retailer (per quintal)	Total Percent Change in Price
1.	April 2021	1,000	72.5	2.5	322	1397	139	4.19	261	1,800	80%
2.	May 2021	1,200	87	3	374	1664	166	4.92	465	2,300	91%
3.	June 2021	1,500	108.5	3.75	404	1904	190	5.71	601	2,700	80%
4.	July 2021	1,500	108.5	3.75	488	1988	198	5.96	608	2,800	86%
5.	August 2021	1,700	123.2	4.25	413	2113	211	6.33	769	3,300	94%
6.	September 2021	1,600	116	4	403	2003	200	6	891	3,100	94%
7.	October 2021	2,100	152.2	5.25	500	2600	260	7.8	926	4,300	105%
8.	November 2021	1,700	123.2	4.25	584	2284	228	6.85	961	3,500	106%
9.	December 2021	1,700	123.2	4.25	390	2090	209	6.27	901	3,400	100%

10.	January 2022	1,500	108.5	3.75	444	1944	194	5.83	956	3,100	106%
11.	February 2022	1,500	108.5	3.75	395	1895	189	5.68	910	3,000	100%
12.	March 2022	1,200	87	3	302	1502	150	4.50	843	2,500	108%
13.	April 2022	700	50.75	1.75	386	1086	108	3.25	302	1,500	114%
14.	May 2022	700	50.75	1.75	350	1050	105	3.15	341	1,500	114%
15.	June 2022	1,000	72.5	2.5	445	1445	144	4.33	506	2,100	110%
16.	July 2022	1,000	72.5	2.5	320	1320	132	3.96	544	2,000	100%
17.	August 2022	1,000	72.5	2.5	345	1345	134	4.03	716	2,200	120%
18.	September 2022	1,000	72.5	2.5	288	1288	128	3.86	580	2,000	100%
19.	October 2022	1,300	94.25	3.25	323	1623	162	4.86	710	2,500	92%
20.	November 2022	1,500	108.5	3.75	401	1901	190	5.70	965	3,100	106%
21.	December 2022	1,000	72.5	2.5	356	1356	135	4.06	404	1,900	90%
22.	January 2023	1,000	72.5	2.5	89	1059	105	3.17	42	1,200	20%
23.	February 2023	800	58	2	320	1120	112	3.36	264	1,500	87%
24.	March 2023	800	58	2	296	1096	109	3.28	391	1,600	100%
25.	April 2023	1,000	72.5	2.5	320	1320	132	3.96	344	1,800	80%
26.	May 2023	1,000	72.5	2.5	298	1298	129	3.89	569	2,000	100%
27.	June 2023	1,200	87	3	330	1530	153	4.59	612	2,300	91%
28.	July 2023	1,200	87	3	296	1496	149	4.48	850	2,500	108%
29.	August 2023	1,200	87	3	280	1480	148	4.44	767	2,400	100%
30.	September 2023	800	58	2	320	1120	112	3.36	164	1,400	75%
31.	October 2023	1,000	72.5	2.5	286	1286	128	3.85	482	1,900	90%
32.	November 2023	1,000	72.5	2.5	320	1320	132	3.96	544	2,000	100%

Source: (Data on wholesale prices is collected from APMC office Satara and Data on retail prices is collected from retailer's journal recording)

The above table shows the average wholesale and retail prices of Onion with their percentage change monthly for the study period from April 2021–November 2023.

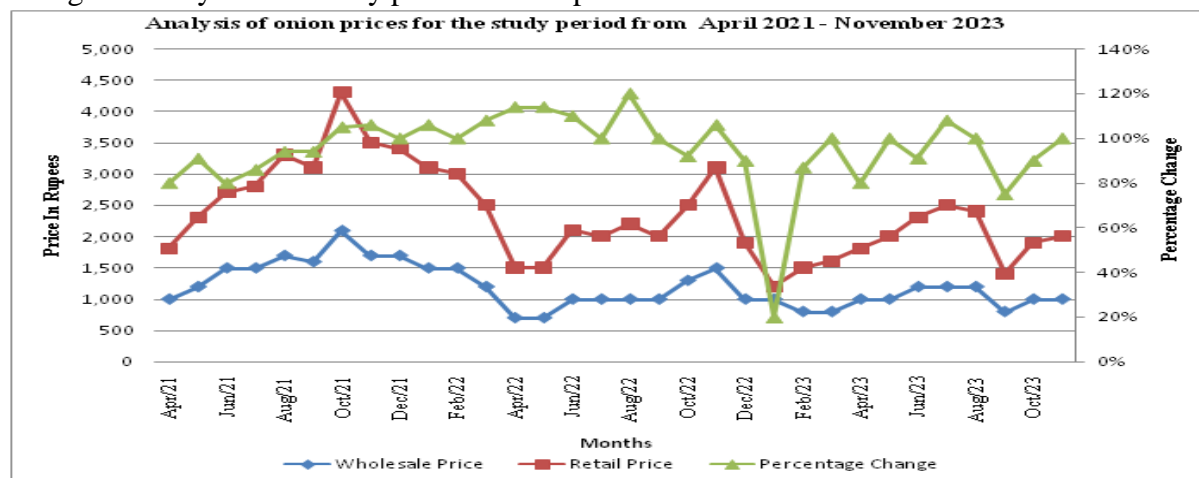


Figure 1: Analysis of onion prices for the study period from April 2021 - November 2023

Price index analysis of onions from April 2021 to November 2023 for 32 months shows wholesale prices ranging from 700 to 2100 and retail prices from 1200 to 4300 per quintal, with enormous percentage change of 20% to 120% supporting researchers' model.

In the same way, the data for Potato, Garlic, Ginger, and Green Chilly have been taken and analyzed to find facts. The Analysis of the data on these vegetables is as follows:

Analysis of Potato prices for the study period from April 2021 - November 2023

Price index analysis of Potato from April 2021 to November 2023 for 32 months shows wholesale prices ranging from 800 to 1800 and retail prices from 1500 to 3600 per quintal, with enormous percentage change of 53% to 133% supporting researchers' model.

Analysis of Garlic prices for the study period from April 2021 - November 2023

Price index analysis of Garlic from April 2021 to November 2023 for 32 months shows wholesale prices ranging from 1000 to 4000 and retail prices from 2000 to 8000 per quintal, with enormous percentage change of 85% to 116% supporting the researchers' model.

Analysis of Ginger prices for the study period from April 2021 - November 2023

Price index analysis of Ginger from April 2021 to November 2023 for 32 months shows wholesale prices ranging from 700 to 4000 and retail prices from 1500 to 8000 per quintal, with enormous percentage change of 90% to 128% supporting researchers' model.

Analysis of Green Chilly prices for the study period from April 2021 - November 2023

Price index analysis of Green Chilly from April 2021 to November 2023 for 32 months shows wholesale prices ranging from 1500 to 4000 and retail prices from 3100 to 8200 per quintal, with enormous percentage change of 88% to 115% supporting researchers' model.

**Analysis of data on average prices of all the selected vegetables
Year 2021 – 2022**

(Figures per quintal are in Indian rupees)

Sr.	Commodity	Average Wholesale Rate (per quintal)	Average Retail Rate (per quintal)	Percentage change in price
1.	Onion	1,450	2,983	105%
2.	Potato	1,250	2,408	92%
3.	Garlic	4,000	6,600	65%
4.	Ginger	1,500	2,358	57%
5.	Green Chilly	2,500	4,758	90%

Source: (Data on wholesale prices is collected from APMC office Satara and Data on retail prices is collected from retailer's journal recording)

The above table shows the Average Wholesale and Retail Prices of all the selected vegetables for the year 2021 – 2022.



Analysis of the Average Wholesale and Retail Prices of all the selected vegetables for the year 2021 – 2022

Analysis of price indexes for selected vegetables in the financial year 2021-2022 shows yearly changes. Average wholesale and retail price changes per quintal for Onion: Rs. 1450, Rs. 2983 (105% change), Potato: Rs. 1250, Rs. 2408 (92% change), Garlic: Rs. 4000, Rs. 6600 (65% change), Ginger: Rs. 1500, Rs. 2358 (57% change), Green Chilly: Rs. 2500, Rs. 4758 (90% change).

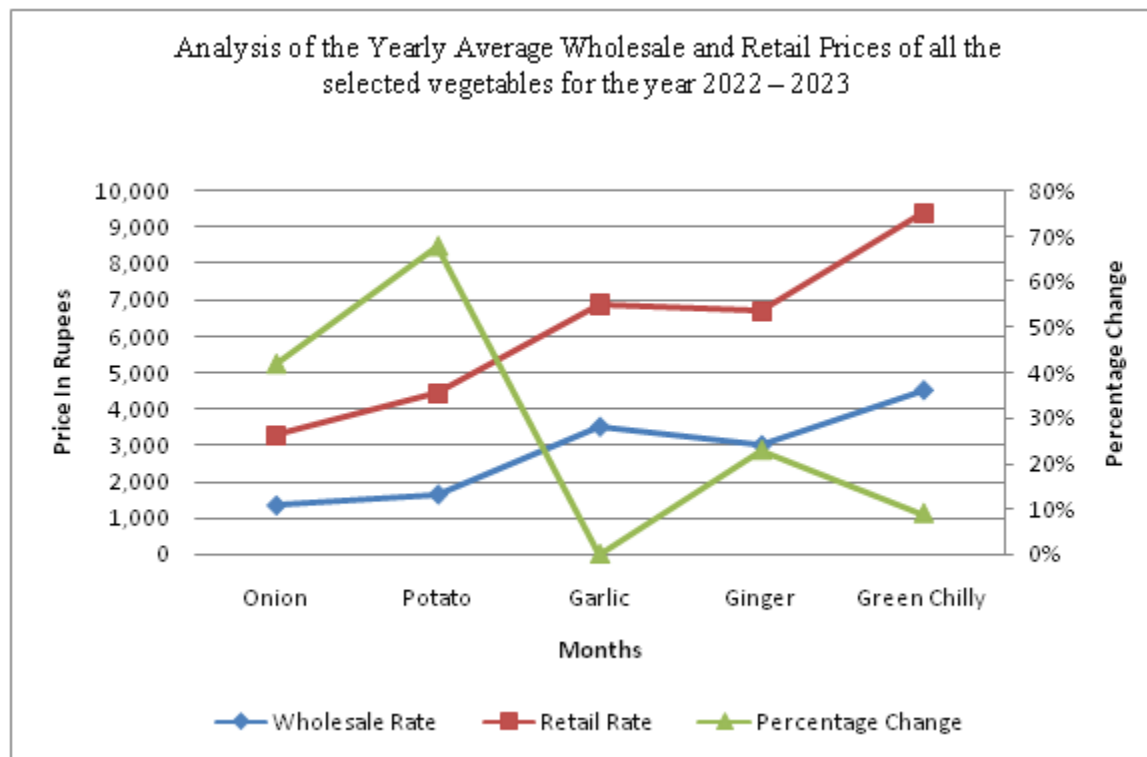
Year 2022 – 2023

(Figures per quintal are in Indian rupees)

Sr.	Commodity	Average Wholesale Rate (per quintal)	Average Retail Rate (per quintal)	Percentage change in price
1.	Onion	1,350	1,925	42%
2.	Potato	1,650	2,775	68%
3.	Garlic	3,500	3,383	(-34%)
4.	Ginger	3,000	3,700	23%
5.	Green Chilly	4,500	4,900	9%

Source: (Data on wholesale prices is collected from APMC office Satara and Data on retail prices is collected from retailer's journal recording)

The above table shows the Average Wholesale and Retail Prices of all the selected vegetables for the year 2022 – 2023.



Analysis of the Average Wholesale and Retail Prices of all the selected vegetables for the year 2022 – 2023

Analysis of price indexes for selected vegetables for the financial year 2022-2023 shows yearly changes. Average wholesale and retail prices per quintal for Onion are Rs. 1350 and Rs.1925 (42% change); for Potato Rs.1650 and Rs.2775 (68% change); for Garlic Rs.3500 and Rs.3383 (-34% change); for Ginger Rs.3000 and Rs.3700 (23% change); for Green Chilly Rs.4500 and Rs.4900 (9% change).

6. Findings :

1. The overall process of the sale of produce from the various supply chain factors to the customers contains many price margins which create huge disparity among the wholesale and retail prices of vegetables i.e. Onion, Potato, Garlic, Ginger, and Green Chilly.
2. In the data series, the APMC rates are the rates given to the farmers for their produce, and it is comparably lower than what the consumers pay for their produce.
3. Because of the price gap bulk of the profit goes to the post-farmer and pre-consumer supply chain factors and a very small amount of price margin is left to the farmer.
4. The price disparity gets distributed in various heads such as commission, expenses, wholesaler's margin, retailer's margin, etc. This reduces the way of providing benefits to the farmers.

7. Suggestions:

An independent organization can be developed working on the philosophy of cooperation and or an NGO that will work to combat prevailing issues. The working of said cooperative

organization or NGO would be depicted in the given flow chart. The detailed SOP has worked out for the given model. Profit sharing is to be done to farmers and consumers. This will also help to arrest inflation.

Management procedures for the implementation of the proposed model:

I. Legal works and authentication management :

- Legal authentication – 1. Firm registration
2. FSSAI registration
3. GST registration
- Legal certifications – 1. Registered firm certificate
2. FSSAI registration certificate
3. Central FSSAI license
4. GST registration certificate

II. Collaborations management:

- Memorandum of agreement (MOA) –
Contract with the farmers regarding-
 1. Pricing of agricultural commodities
 2. Profit distribution
 3. Emergency procedures

III. Human resource management:

- Allocation of human resources with the working SOP –
 1. Supervisor
 2. Food inspector
 3. Manager
 4. Labors
 5. Salesman
 6. Accountant
 7. Delivery mans

I. Protocols of implementation of sales methods:

- Input purchasing time for each sales method: Around 6 am – 8 am
- Selling hours for each sales method: 9 am – 6 pm
- Payment method for each sales method: Cash/Online/Bank

A. Protocols for direct sales –

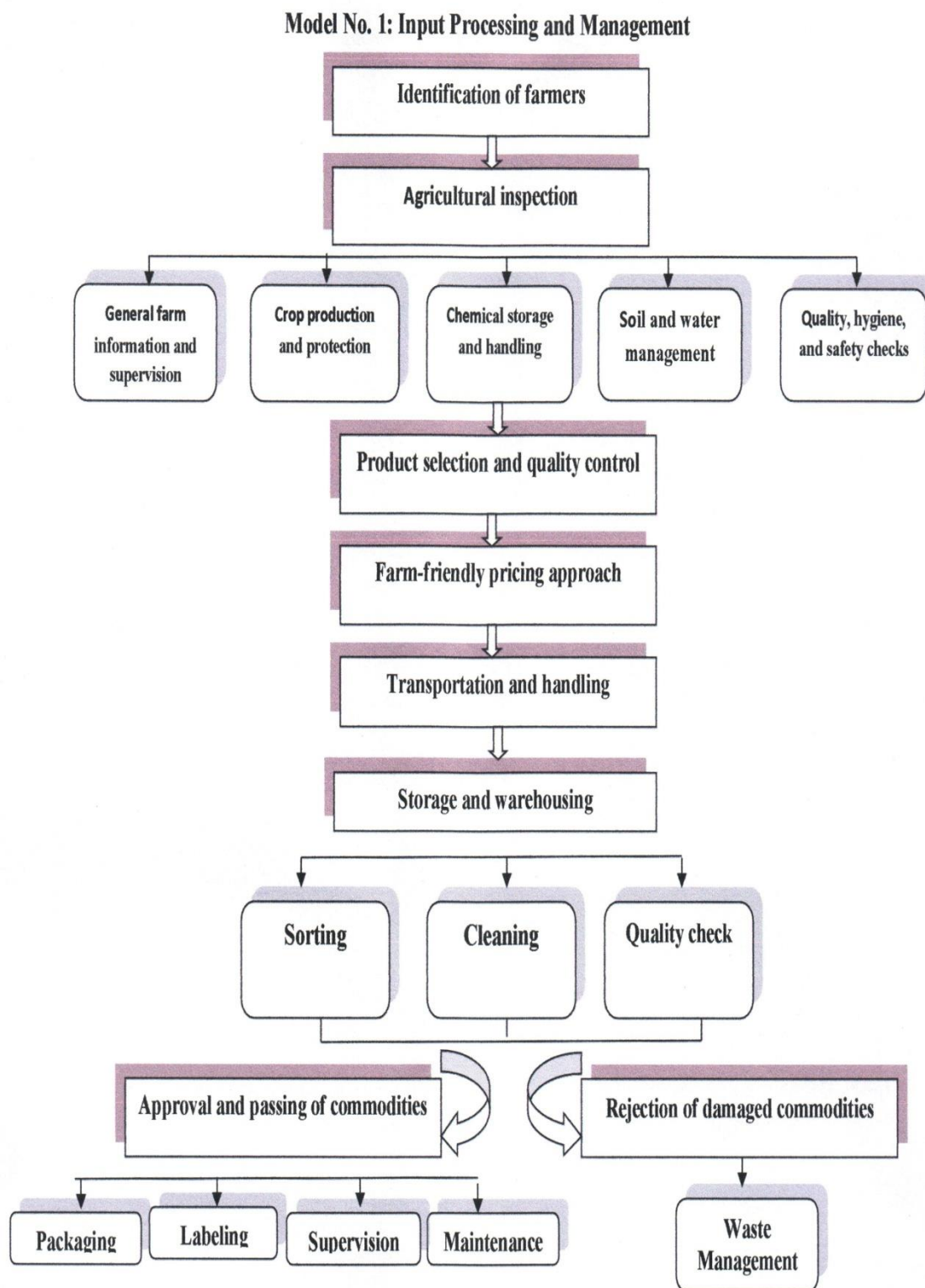
1. Product display: Physical outlet/store
2. Common trading process for sales.

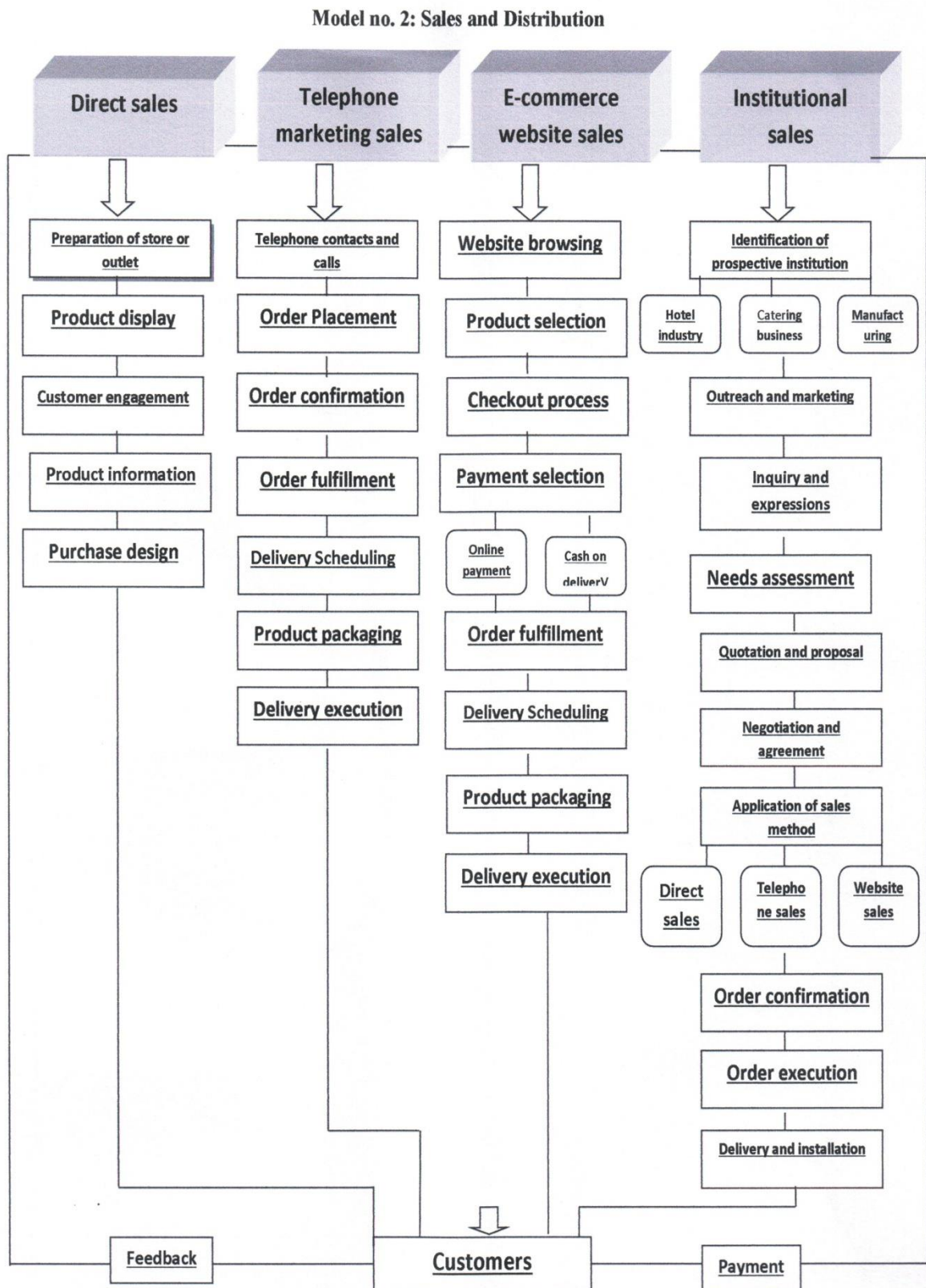
B. Protocols for telephone marketing sales –

1. Setting up calling goals and quickly answering calls
2. Appropriate greetings and introductory words
3. Proper recording and confirmation of customer's orders and addresses
4. Appropriate end of conversation seeing towards the continuity of future relationship

C. Protocols for e-commerce website sales-

1. Product display: Website/Application
2. Daily product price updates





3. Customer's login portal
4. Order cart to place orders
5. Confirmation process for orders and addresses of customers
6. Customer's location uploading facility
7. Displaying order history for future use
8. Customer's reviews and feedback maintenance
9. Replacement option – only for damaged products
10. Immediate messaging services for order confirmation, tracking, and delivery details
11. Customer care and support services

D. Protocols for institutional sales :

1. The protocols for institutional sales methods depend on the sales method selected by the purchaser while making a contract of purchase of any commodity.
2. All the protocols of direct sales, telephone marketing sales, and website sales will apply to this sales method

II. Protocols of order fulfillment:

1. Conveying recorded orders to the manager
2. Order processing
3. Gathering and packaging of ordered vegetables
4. Placing vegetables for order scheduling

III. Protocols of delivery scheduling and management:

1. Area of delivery: within 10km. from outlet
2. Minimum amount of order: Rs. 200.

Delivery amount	Charges
Rs.200 and above	As per distance
Rs500 and above	Free delivery

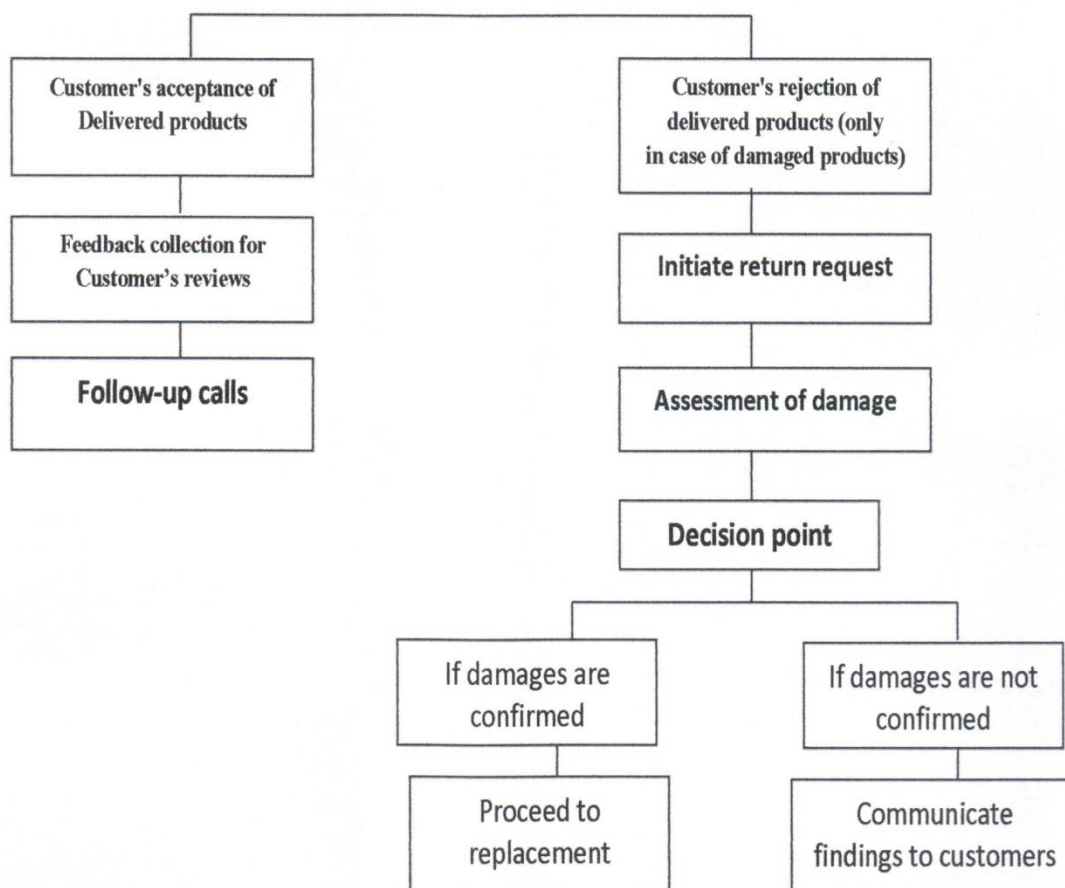
Delivery distance	Delivery charges
Up to the first 5 km	Rs.40
6 km	Rs.50
7 km	Rs.60
8 km	Rs.70
9 km	Rs.80
10 km	Rs.90

V. Protocols of replacement execution process:

1. Replacement order generation
2. Update products to reflect the replacement
3. Return handling – Damaged product return management
4. Order rescheduling
5. Customer notification-
Informing customers about replacement orders and providing relevant details
6. Delivery execution
7. Feedback collection-
Gathering feedback regarding damaged products and the replacement process.
8. Follow-up calls.

IV. Protocols of post-delivery execution process:

1. Rechecking the delivered products
2. Seeing customer interaction



- **Management of damaged products:**
Vegetable waste management method -
Natural fertilizer processing by storing vegetable waste

• Comparative Pricing Model of Current System and Proposed Model :

Particulars	Current System	Proposed Model
Farmer's Price	1000	$1000 + 20\% = 1200$
Commissions And APMC Cess	7.25%	-

Other Expenses	0.25%	-
Wholesaler's Profit Margin	10% - 40%	-
Commission For Retailer	10%	10%
Other Expenses	0.30%	1%
Retailer's Profit Margin	10% - 40%	25%
Average Retail Rate For Customers	2000	<u>2000 - 20% = 1600</u>

- **Comparative Model of Supply Chain :**

- Current Supply Chain –
Farmers → APMC → Wholesales → Retailers → Consumers
- Proposed Supply Chain –
Farmers → NGO/Cooperative Entity → Consumers

8. Conclusion:

There is a wide disparity in prices of agricultural commodities between wholesale and retail prices which is one of the crucial elements in the agricultural market. It also represents the uncertainties in the farmer's income because of the huge price differences in both the wholesale and retail domains. The implementation of proposed models in agricultural practices may help to share margins which lead to a win-win situation. The model suggested is extending an opportunity to a value-added start-up.

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