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Perception of dealers and retailers towards agrochemical products in Gujarat and Madhya Pradesh

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Abstract

The present study, entitled “Perception of Dealers and Retailers Towards Agrochemical Products in Gujarat and Madhya Pradesh,” aimed to examine the demographic and business profile of agrochemical dealers and retailers and assess their perceptions towards agrochemical products and packaging. A descriptive research design was adopted, and primary data were collected from 200 respondents (100 from each state) through personal interviews using a semi-structured schedule. Descriptive statistics and the Weighted Average Mean (WAM) technique were used for data analysis. The findings revealed that retailers constituted the majority of respondents in Gujarat (91%) and Madhya Pradesh (80%). The dominant age group was 36-50 years, and most respondents were graduates or HSC pass with considerable business experience. Uniformity in product formulation emerged as the most important product attribute in both Gujarat (WAM = 4.32) and Madhya Pradesh (WAM = 4.21). Visual design and graphics received the highest ranking among packaging attributes, while clarity of crop and usage information was the most preferred labeling feature. The study concludes that dealers and retailers highly value product consistency, attractive packaging, and clear labeling, whereas dosage instruction visibility and sealing quality require improvement.

Keywords: Agrochemicals, dealers, retailers, perception, packaging, labelling

Introduction

Agriculture serves as India's fundamental economic foundation because it provides essential employment to 58% of Indian citizens while building the country's social and economic structure. The sector currently generates between 17.9% and 18.2% of India's Gross Value Added (GVA) during 2024-25. To meet the food security demands of a projected 1.5 billion people by 2030, the sector has transitioned from traditional subsistence farming to a more intensive, input-driven model. Historically, India's foodgrain production has seen a six-fold rise, jumping from roughly 50 million tonnes in the 1950s to over 330 million tonnes in recent years. A critical driver of this productivity surge is the systematic use of agrochemicals; it is estimated that nearly 50% of the increase in foodgrain production in India can be attributed to the judicious use of fertilizers and crop protection chemicals [15]. India has built a solid domestic production capacity over the years which has turned the country into one of Asia's major pesticide manufacturing nations. India produced about 258,130 metric tonnes of pesticides during 2022-23 and produces more than 100 technical-grade pesticides out of its total inventory of several hundred registered chemical compounds [10]. In India, agricultural input dealers connect manufacturers with farmers to deliver agrochemicals. The country has about 2.82 lakh dealers who sell seeds, fertilizers, pesticides and farm equipment while offering credit and advisory services to farmers. National studies show that 13 percent of farmers receive agricultural advice from input dealers, underscoring the critical role of this distribution channel in shaping agrochemical adoption [9]. Despite this importance, systematic research on how dealers and retailers perceive agrochemical products and their packaging remains limited, particularly in the context of Gujarat and Madhya Pradesh two agriculturally significant states with diverse cropping patterns and market structures.

Objectives

The objectives of the study were: (1) To study the demographic and business profile of agrochemical dealers and retailers. (2) To study the perception of dealers and retailers towards agrochemical products. (3) To study the perception of dealers and retailers regarding packaging of agrochemical products.

Methodology

The study was carried out in selected districts of Gujarat and Madhya Pradesh. In Gujarat, the districts of Rajkot, Jamnagar, Junagadh, Gir Somnath, Surat and Navsari were covered. In Madhya Pradesh, the districts of Ujjain, Ratlam, Dhar, Indore and Dewas were selected. A descriptive research design was adopted for the study.

Primary data were collected from respondents through personal interviews using a semi-structured schedule. Purposive sampling technique under a non-probability sampling method was employed. Dealers and retailers constituted the sampling unit, and a total sample of 200 respondents was selected 100 from each state. Secondary data were compiled from journals, review papers, research articles, as well as government and private agency reports and websites.

Descriptive statistical analysis was used to study the demographic and business profile of respondents. The Weighted Average Mean (WAM) technique was applied to analyze perception data collected on a five-point Likert scale (1 = Strongly Dissatisfy to 5 = Strongly Satisfy). The WAM was computed using the formula: $WAM(X) = (F1X1 + F2X2 + F3X3 + F4X4 + F5X5)/X_t$, where F = weight given to each response, X = number of responses, and X_t = total number of responses.

Results and Discussion

Demographic and Business Profile of Agrochemical Dealers and Retailers

Type of Dealership

Table 1: Type of Dealership

Type of Dealership	Gujarat (n)	Gujarat %	Madhya Pradesh (n)	Madhya Pradesh %
Dealer	03	03.00	02	02.00
Retailer	88	88.00	80	80.00
Both	09	09.00	18	18.00
Total	100	100.00	100	100.00

Table 1 indicates that the majority of respondents in Gujarat (88%) and Madhya Pradesh (80%) were Retailers, followed by those involved in both dealership and retail activities and exclusive Dealers, indicating a retail-dominant agrochemical distribution structure in Gujarat and Madhya Pradesh.

Age of Respondents

Table 2: Age of Respondents

Age Group	Gujarat (n)	Gujarat %	Madhya Pradesh (n)	Madhya Pradesh %
Less than 35 (Young)	28	28.00	21	21.00
36-50 (Middle)	53	53.00	55	55.00
51 and above (Old)	19	19.00	24	24.00
Total	100	100.00	100	100.00

Table 2 indicates that the age group of 36-50 years (middle) constituted the highest proportion of respondents in both Gujarat (53%) and Madhya Pradesh (55%) This indicates a predominantly middle-aged workforce in the agrochemical retail sector.

Educational Qualification of Respondents

Table 3: Educational Qualification of Respondents

Education	Gujarat (n)	Gujarat %	Madhya Pradesh (n)	Madhya Pradesh %
Below SSC	02	02.00	04	04.00
SSC	19	19.00	16	16.00
HSC	38	38.00	43	43.00
Graduate	41	41.00	37	37.00
Total	100	100.00	100	100.00

Table 3 indicates that in Gujarat, 41% of respondents were graduates and 38% held HSC qualifications. In Madhya Pradesh, 43% were HSC pass and 37% were graduates. In both states, a very small proportion had education below SSC level.

Experience of Respondents

Table 4: Experience of Respondents

Years of Experience	Gujarat (n)	Gujarat %	Madhya Pradesh (n)	Madhya Pradesh %
Less than 5 Years	08	08.00	10	10.00
5-10 Years	44	44.00	37	37.00
11-20 Years	34	34.00	41	41.00
More than 20 Years	14	14.00	12	12.00
Total	100	100.00	100	100.00

Table 4 indicates that the majority of Gujarat respondents had 5-10 years of experience (44%), while in Madhya Pradesh, the 11-20 years category was dominant (41%), reflecting a relatively more experienced dealer base in MP. In both states, those with less than 5 years of experience represented the smallest segment.

Approximate Annual Turnover

Table 5: Approximate Annual Turnover

Annual Turnover (₹)	Gujarat (n)	Gujarat %	Madhya Pradesh (n)	Madhya Pradesh %
Below ₹50 Lakhs	08	08.00	10	10.00
₹50 Lakhs-₹1 Crore	35	35.00	37	37.00
₹1 Crore-₹5 Crores	44	44.00	36	36.00
Above ₹5 Crores	13	13.00	17	17.00
Total	100	100.00	100	100.00

Table 5 indicates that Most Gujarat respondents (44%) reported a turnover in the ₹1 Crore-₹5 Crores range, while in Madhya Pradesh, the ₹50 Lakhs-₹1 Crore range was most common (37%), indicating moderate to high business volumes across both states.

Perception towards Agrochemical Product Quality

The perception of dealers and retailers towards agrochemical products was analyzed using a Likert scale method on a five-point scale (1 = Strongly Dissatisfy to 5 = Strongly Satisfy). The collected data were analyzed using the Weighted Average Mean (WAM) method.

Table 6: Perception towards Agrochemical Product Quality

Sr. No.	Quality Parameter	Gujarat (WAM)	Madhya Pradesh (WAM)
1	Uniformity in product formulation	4.32	4.21
2	Effectiveness as per claim	4.02	4.00
3	Farmer repurchase rate	3.98	4.09
4	Consistency in product quality	3.92	3.98
5	Overall product quality	3.87	3.93
6	Shelf-life and stability	3.42	3.29
7	Absence of quality defects (Sedimentation, Caking etc.)	3.09	3.44

Table 6 indicates that Uniformity in product formulation ranked highest in both Gujarat (WAM = 4.32) and Madhya Pradesh (WAM = 4.21), followed by effectiveness as per claim and farmer repurchase rate, indicating that formulation consistency and field performance are the most critical product attributes for dealers. The lowest perception in Gujarat was for absence of quality defects (WAM = 3.09), while in Madhya Pradesh, shelf-life and stability scored lowest (WAM = 3.29), suggesting state-specific areas for improvement.

Perception towards Packaging of Agrochemical Products

Packaging Design and Attractiveness

Table 7: Packaging Design and Attractiveness

Sr. No.	Parameter	Gujarat (WAM)	Madhya Pradesh (WAM)
1	Visual design and graphics	4.44	4.60
2	Brand name visibility and recognition	4.29	4.34
3	Overall attractiveness of packaging	4.16	4.04
4	Appeal of colour combination	4.13	4.26
5	Ease of identifying product on shelf	4.01	4.02
6	Professional and premium look	3.96	3.87

Table 7 indicates that Visual design and graphics were the highest rated packaging parameter in both Gujarat (WAM = 4.44) and Madhya Pradesh (WAM = 4.60), confirming that strong visual appeal is the primary driver of packaging perception among dealers. Brand name visibility and recognition ranked second in both states. Professional and premium look received the lowest scores (Gujarat: 3.96; MP: 3.87), indicating scope for improvement in enhancing the premium appearance of packaging.

Label Design and Information

Table 8: Label Design and Information

Sr. No.	Parameter	Gujarat (WAM)	Madhya Pradesh (WAM)
1	Clarity of crop and usage information	4.51	4.47
2	Readability of text (font size & style)	4.31	4.43
3	Safety warnings and precaution details	4.15	4.09
4	Information in local language	3.97	3.75
5	Visibility of dosage instructions	3.56	3.35

Table 8 indicates that Clarity of crop and usage information was ranked first in both Gujarat (WAM = 4.51) and Madhya Pradesh (WAM = 4.47), highlighting the critical need for clear, actionable product guidance on labels. Visibility of

dosage instructions received the lowest scores in both states (Gujarat: 3.56; MP: 3.35), indicating a significant gap in dosage communication.

Primary Packaging-Strength and Functionality

Table 9: Primary Packaging-Strength and Functionality

Sr. No.	Parameter	Gujarat (WAM)	Madhya Pradesh (WAM)
1	Protection from moisture and contamination	4.01	3.90
2	Ability to withstand handling during transport	3.86	4.06
3	Strength and durability of primary packaging	3.70	3.67
4	Quality of sealing/closure	3.33	3.17

Table 9 indicates that Protection from moisture and contamination was the most perceived parameter in Gujarat (WAM = 4.01), while ability to withstand handling during transport led in Madhya Pradesh (WAM = 4.06). Quality of sealing/closure received the lowest scores in both Gujarat (3.33) and Madhya Pradesh (3.17), pointing to this as the weakest area in primary packaging perception and a critical improvement priority.

Secondary Packaging-Strength and Protection

Table 10: Secondary Packaging-Strength and Protection

Sr. No.	Parameter	Gujarat (WAM)	Madhya Pradesh (WAM)
1	Protection of primary pack during transportation	4.23	4.14
2	Strength of outer packaging material	4.17	4.00
3	Resistance to damage during stacking and storage	4.10	4.04

Table 10 indicates that Protection of primary pack during transportation ranked first in both Gujarat (WAM = 4.23) and Madhya Pradesh (WAM = 4.14), reflecting dealer priority on product integrity during the supply chain. Secondary packaging was overall well-perceived, though consistency in outer material strength remains a concern in Madhya Pradesh.

Conclusion

The agrochemical dealer and retailer community in Gujarat and Madhya Pradesh is predominantly composed of middle-aged, moderately experienced retailers with graduate or HSC-level education, engaged in mid-to-large scale businesses. Purchase recommendation behaviour among dealers is strongly driven by product formulation consistency, field effectiveness, and repeat farmer demand. Shelf-life stability and defect-free products represent areas for quality enhancement. On the packaging front, visual identity through design, colour, and brand visibility emerges as the single most powerful driver of dealer perception. Label clarity-particularly for crop usage and safety information-plays a critical functional role. Dosage instruction visibility is consistently identified as the weakest label attribute in both states, and quality of sealing/closure is the most underperforming primary packaging parameter, warranting urgent corrective action. Secondary packaging is

generally well-perceived in terms of transit protection. An integrated approach combining superior visual branding, informative and vernacular labelling, robust packaging materials, and consistent product quality is essential for agrochemical companies seeking to strengthen dealer trust, improve shelf visibility, and enhance product adoption in the competitive markets of Gujarat and Madhya Pradesh.

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