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Behavioural pattern of pesticide dealers towards sales-promotional strategies in Khordha district of Odisha, India

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Abstract
This research is an attempt to uncover the behavioural aspects of the business intermediaries in Khordha district of Odisha. This research may be highly beneficial to all the stakeholders involved in the supply-chain. Snowball sampling method was followed during the research. The primary data were collected from the 27 sample intermediaries including wholesalers-cum-dealers and retailers with the help of structured schedules consisting open-ended as well as close-ended questions and were presented in tabular and graphical form to facilitate easy compilations. 56 percent of the respondents was found to be doing wholesaling business followed by retailing business. Majority of the respondents involved in pesticide business, i.e., 41 percent were in the age group of '36–49' years. About 74.07 percent of the respondents belonged to general caste. Most of the business intermediaries (63 percent) were found to be graduates. Majority of the business intermediaries (about 44 percent) had annual turnover of less than INR 25 lakhs. While considering the motivational initiatives for business, 59 percent of the respondents had preference for national level tours and only 7 percent of the respondents showed their interest for international tours. While looking into preferences for business with national and multinational companies, 52 percent of the respondents preferred to do business with local level companies followed by 26 per with all types of companies, 18 percent with national level and only 4 percent with multinational companies. For the smooth running of business, 63 percent of sample dealers and retailers preferred company representatives with business-oriented attributes, followed by helpfulness with 19 percent and friendliness with 18 percent. Cash transaction was preferred by 56 percent of the sample dealers and retailers prefer to do pesticide business in cash and 22% each for credit and both credit as well as cash transaction. Taking business expansion, 81 percent of sample had business enhancement plan and rest had no plan. The major promotional tool preferred by the dealers and retailers were 'outside posters/ banners (96.30 percent)', 'followed by farmers meeting (92.59 percent)', 'field visits (88.89 percent)', 'point of purchase materials (85.19 percent)', 'promotional schemes or packages (77.78 percent)', 'jeep campaigning (66.67 percent)', 'personal accessories for dealers (59.26 percent)', 'channel partners meeting (55.56)', 'mega farmers meetings (48.15 percent)', 'crop seminars (37.04 percent)', 'need company staff at store (29.63 percent)'.

Keywords: Pesticide dealers, behaviours, sales-promotional strategies

Introduction
The size of the pesticides market in India showcased INR 229.4 billion in 2022. The market is expected to reach INR 342.3 billion by 2028, exhibiting a compound annual growth rate of 6.6 percent during 2023–2028 (Research and Markets, 2023) [1]. Pesticide distribution in India is managed through more than two lakhs sale points operated by private owners, public sector (Department of Agriculture/Horticulture), co-operative organisations and NGOs. Majority (90 percent) of the retail trade is managed by the private sector. In an anxiety to guard against the potential risk, the farmer often adopts chemical spray as a prophylactic measure than a control mechanism. The local information gained from fellow farmers and the guidance from retailers decides the chemical that is to be used. Pesticide traders act as a major source of consultancy for pest management. The private companies play an important role in dissemination of information at farmer levels through these pesticide traders and field demonstrations (Devi *et al*. 2017) [2]. Agro-input dealers are small, often independent stockists or distributors of agricultural inputs, such as pesticides. The private retail sector, including agro-input dealers, is often the dominant source of pesticides for farmers in low- and middle-income countries (Kato & Greeley, 2016) [3]. Erdoğan *et al.* (2019) [4] reported that in terms of pesticide selection, 64% of the farmers rely on pesticide dealers, 20% rely on the agricultural organization, 8% rely on the neighbouring farmer while 8% rely on their own experience.

Pesticide dealers reported that 48% of the farmers base their pesticide buying on price, 30% on brand, 12% on company name and 10% on active substance. Mostly farmers in the developing countries due to lack of effective public extension services highly rely on the opinion of agriculture input traders who exploit them into buying relatively expensive inputs. In order to study this aspect, Motalleb *et al.* (2023) [5] conducted research using the endogenous switching regression estimation method in Bangladesh by collecting primary information from 379 farmers in two seasons. The findings of the research suggested no statistical difference between the farmers who depended on the suggestions of traders and those who do not. Moreover, it was concluded that in absence of effective public extension workers, the profit maximizing agriculture input traders who provided unbiased, beneficial information to the farmer helped in rectifying possible market failures. Sahu and Pathak (2023) [6] in their research found out certain facts about pesticides and pesticide markets in their research field. The immediate efficacy of the chemical pesticides was an important criterion in building strong customer loyalty, those who were mostly dependent on the local agriculture input supply retailers for pesticide procurement. Alternative management techniques like soil testing, integrated pest management, physical control was also practiced by farmers in the study area. Respondents ranked effectiveness of chemical pesticides as the major influencing factor and retailers' suggestions as the major source of information affecting their purchase of pesticides. The dealers and retailers also played an important role in the pesticide businesses advertising methods. As per the marketing tactics followed by pesticide companies, with an average preference score of 67.72, UPL was ranked first followed by BASF (62.72), PI (60.71), Bayer (57.26), Syngenta (53.68) Sumitomo (52.38), Rallis India (47.02) Dupont (39.45), Dhanuka (32.88) and Nagarjuna (24.35). The dealers played a major role in the promotional strategy, where UPL Pesticide company was ranked first in case of promotional strategies. Vachhani and Panigrahy (2023) [7] in their study to comprehend the purchasing behaviour of farmers towards fungicide for groundnut crops in Maliya Hatina Taluka of Junagadh district of Gujarat, found out that the credibility and recommendations of distributors had a major influence in the purchasing decision of farmers with factors like the lack of availability, lack of discounts and lack of credit availability as some of the major concerns of the farmers. The results also revealed activities like demonstrations, recommendation, farmer meetings as major promotional activities whereas, low margins and issues regarding payment were the major challenges encountered by the dealers. The study basically focused on understanding the farmers' behaviour, their problems and practices for effective adoption and distribution of fungicides, stressing upon the importance of promotional methods in the agri-input industry. Pesticides have been an indispensable agricultural input. Being an agrarian economy, Odisha relies on pesticides consumption for both protective as well as curative farming practices. There has been an emerging trend of plant growth regulators, insect-growth inhibitors, bio-pesticides, etc. for the sustainable agriculture.

Table 1: Pesticide Consumption in Odisha (Five years average)

Years	Pesticides (MT)	India (MT)	% to total	Bio-pesticides (MT)	India (MT)	% to total
2018-19	1609	59670	2.7	310	7203	4.3
2019-20	1115	61702	1.8	333	8847	3.8
2020-21	1158	62193	1.9	165	8647	1.9
2021-22	1240	63284	2.0	122	9321	1.3
2022-23	1348	52466	2.6	81	7248	1.1
5 yrs. avg.	1294	59863	2.2	202	8254	2.4

***Source*:** https://ppqs.gov.in/statistical-database retrieved as on 01.11.2023

Table 1 indicates the five-year average use of chemical pesticides and bio-pesticides in India as well as Odisha and the percentage of pesticides consumption in Odisha to that of India. Out of the average five-year total consumption of 59,863 MT of chemical pesticides and 8,254 MT of bio-pesticide in India, Odisha accounted for about 1,294 MT of chemical pesticides and 202 MT of bio-pesticides amounting to 2.2 percent and 2.4 percent, respectively of the total consumption in India. The pesticide usage was high in India during 2021–22 with about 63,284 MT followed by 62,193 MT in 2020–21 and 61,702 MT in 2019–20 where as in Odisha, the chemical pesticide and bio-pesticide consumption is observed to be highest during 2018–19 (1,609 MT) and 2019–20 (333 MT), respectively.

The intermediaries involved in pesticide business have been very vulnerable because of the dynamic market condition, competitiveness and climatic aberrations. There is a need to investigate the behavioural aspects of the intermediaries involved in pesticide business in the state of Odisha. This research is an attempt to uncover the behavioural pattern of the business intermediaries in Khordha district of Odisha. This research may be highly beneficial to all the stakeholders involved in the supply-chain.

Table 2: Major District-wise Number of Pesticide Dealers

Rank	District Name	Private Dealers	% to total
1	Bargarh	801	12.26
2	Baleshwar	586	8.97
3	Kalahandi	571	8.74
4	Puri	378	5.79
5	Cuttack	376	5.75
6	Khordha	330	5.05
7	Balangir	309	4.73
8	Ganjam	255	3.90
9	Sonepur	247	3.78
10	Nabarangpur	231	3.54
	State Total	6534	100.00

***Source*:** https://odishaagrilicense.nic.in/insecticideDealer

From the table 2 it is clear that Bargarh district has the highest number of private dealers of pesticides (801), followed by Baleshwar district (586), Kalahandi district (571), Puri district (378), Cuttack district (376), Khordha district (330) and others. Khordha district as selected for the study contributes around five percent of the total private pesticide dealers of Odisha.

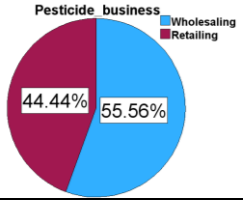
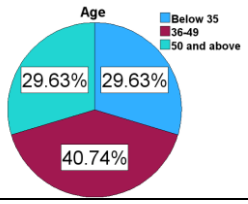
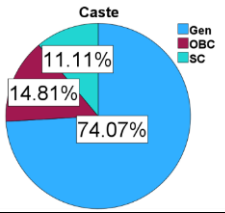
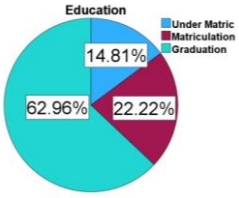
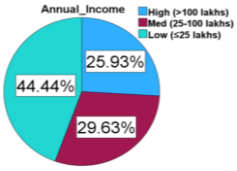
Materials and Methods

Khordha district is located in the south-eastern part of Odisha, adjoining the coastal area. It occupies an area of about 2887.5 sq km. Khordha is having two distinct sub-regions: one is Deltaic Alluvium sub-region which comprises of three blocks Balianta, Balipatna and Chilika, whereas, Banpur, Begunia, Bhubaneswar, Bolagarh, Jatni, Khordha and Tangi belong to Lateritic sub-region. The district enjoys normal rainfall of 1408 mm with maximum and temperature 42.2° and 11.1° Celsius respectively. Similarly, the mean relative Humidity ranges from 46 to 89 percent. It is situated in the agro-climatic zone, East and Southeastern coastal plain and blessed with sandy-loam, loam, clay-loam and clayey soil in varied agro-eco system. Snowball sampling method was followed during the research. It is a non-probability sampling method where new units are recruited by other units to form part of the sample. The primary data were collected from the 27 sample intermediaries including wholesalers-cum-dealers and retailers with the help of structured schedules consisting open-ended as well as close-ended questions and were presented in tabular and graphical form to facilitate easy compilations. The data were summarised with the aid of percentages, averages, etc. to obtain meaningful results.

Results and Discussion

Socio-economic profile refers to information that relates to both social and economic factors of a population. It is used to analyse the well-being, living conditions, and financial situation of individuals or communities. The socio-economic information of the sample respondents was analysed and interpreted. Table 3 shows that 55.56 percent of the respondents were doing wholesaling business and rest 44.44 percent involved in retailing business. While taking into consideration, age of the respondents, 40.74 percent were falling within the age group of '36–49' year, followed by other groups *viz*. 'below 35' years and '50 and above' years. Caste wise composition indicates that 74.07 percent of the respondents were of general caste, followed by OBC (14.82 percent) and SC (11.11 percent). Among the respondents 62.96 percent were graduates, followed by matriculate (22.22 percent) and under matric (14.81 percent). About 44.44 percent of the respondents were coming under low-income group, followed by medium-income group (29.63 percent) and high-income group (25.93 percent).

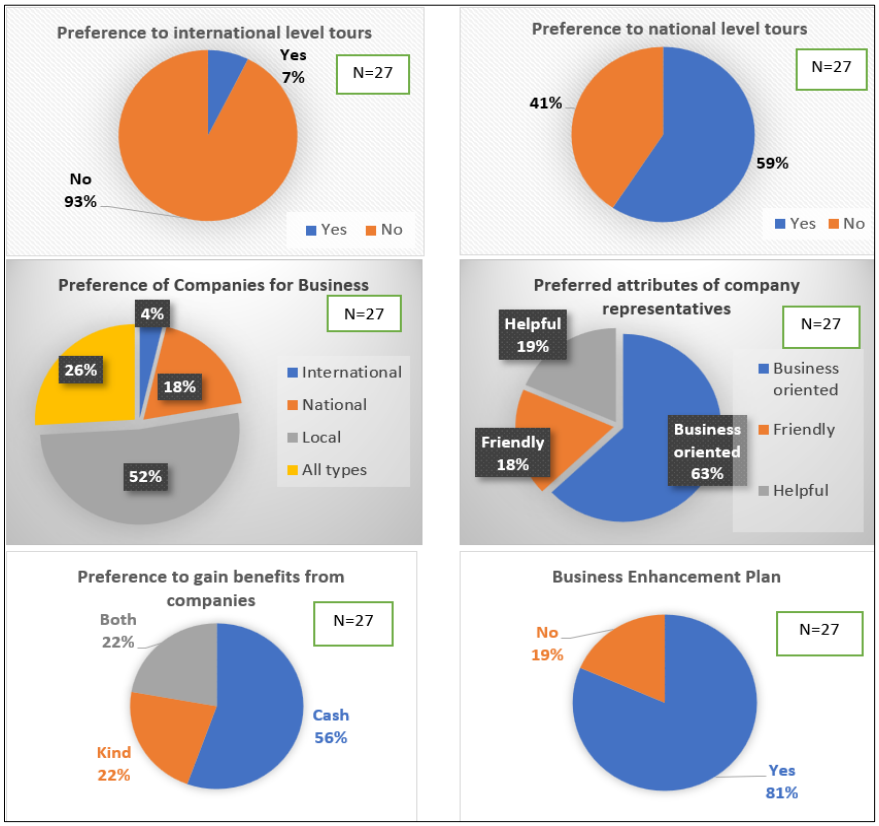
Table 3: Characteristics of Sample

Business type	**Frequency**	**Percent**	
Wholesaling	15	55.56	
Retailing	12	44.44	
Total	27	100.00	
Age	**Frequency**	**Percent**	
Below 35 years	8	29.63	
36-49 years	11	40.74	
50 years and above	8	29.63	
Total	27	100.00	
Caste	**Frequency**	**Percent**	
Gen	20	74.07	
OBC	4	14.82	
SC	3	11.11	
Total	27	100.00	
Education	**Frequency**	**Percent**	
Under Matric	4	14.82	
Matriculation	6	22.22	
Graduation	17	62.96	
Total	27	100.00	
Annual income	**Frequency**	**Percent**	
High (>INR 100 lakhs)	7	25.93	
Med (INR 25-100 lakhs)	8	29.63	
Low (<INR 25 lakhs)	12	44.44	
Total	27	100.00	

***Source*:** Researcher's computation from the primary data

Pesticide dealers/retailers towards different sales and marketing activities of pesticides

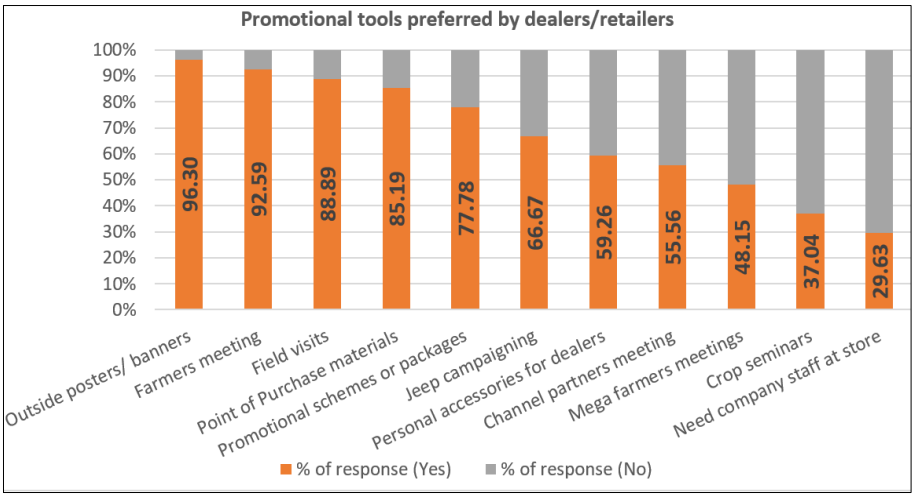
The behavioural pattern of the dealers and retailers regarding different sales and marketing strategies of the pesticide-based companies are regarded as important aspects of business. To analyse this objective, percentage method was performed and interpreted with the help of suitable figures *viz*. pie-charts and bar-diagrams.



***Source*:** Researcher's computation from the primary data

Fig 1: Behavioural pattern of dealers/retailers towards companies' strategies

It was found from the Figure 1 that 59 percent of the respondents had preference for national level tours and only 7 percent of the respondents showed their interest for international level tours. While conducting business with national and multinational companies, 52 percent of the respondents preferred to do business with local level companies followed by 26 per with all types of companies, 18 percent with national level and only four percent with international level companies. For the smooth running of business, 63 percent of sample dealers and retailers preferred company representatives with business-oriented attributes, followed by helpfulness with 19 percent and friendliness with 18 percent. While taking into consideration monetary transaction, 56 percent of the sample dealers and retailers preferred to do pesticide business in cash and 22% each for credit and both credit as well as cash transaction. Taking business expansion, 81 percent of sample had business enhancement plan and rest had no plan.



***Source*:** Researcher's computation from the primary data

Fig 2: Preference of sales and promotional tools by the dealers/retailers

From the Figure 2, it can be observed that the major promotional tool preferred by the dealers and retailers are 'outside posters/ banners (96.30 percent)', 'followed by farmers meeting (92.59 percent)', 'field visits (88.89 percent)', 'point of purchase materials (85.19 percent)', 'promotional schemes or packages (77.78 percent)', 'jeep campaigning (66.67 percent)', 'personal accessories for dealers (59.26 percent)', 'channel partners meeting (55.56)', 'mega farmers meetings (48.15 percent)', 'crop seminars (37.04 percent)'and 'need company staff at store (29.63 percent)'.

Conclusion

The majority of the sample i.e., 56 percent of the respondents were wholesalers-cum-dealers followed by retailers. Majority of the respondents involved in pesticide business, i.e., 41 percent were in the age group of '36–49' years. About 74.07 percent of the respondents belonged to general caste. Most of the business intermediaries (63 percent) were found to be graduates. Majority of the business intermediaries (about 44 percent) had annual turnover of less than INR 25 lakhs. While considering the motivational initiatives for business, 59 percent of the respondents had preference for national level tours and only 7 percent of the respondents showed their interest for international tours. While looking into preferences for business with national and multinational companies, 52 percent of the respondents preferred to do business with local level companies followed by 26 per with all types of companies, 18 percent with national level and only 4 percent with multinational companies. For the smooth running of business, 63 percent of sample dealers and retailers preferred company representatives with business-oriented attributes, followed by helpfulness with 19 percent and friendliness with 18 percent. Cash transaction was preferred by 56 percent of the sample dealers and retailers prefer to do pesticide business in cash and 22% each for credit and both credit as well as cash transaction. Taking business expansion, 81 percent of sample had business enhancement plan and rest had no plan. The major promotional tool preferred by the dealers and retailers were 'outside posters/ banners (96.30 percent)', 'followed by farmers meeting (92.59 percent)', 'field visits (88.89 percent)', 'point of purchase materials (85.19 percent)', 'promotional schemes or packages (77.78 percent)', 'jeep campaigning (66.67 percent)', 'personal accessories for dealers (59.26 percent)', 'channel partners meeting (55.56)', 'mega farmers meetings (48.15 percent)', 'crop seminars (37.04 percent)', 'need company staff at store (29.63 percent)'.

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