

Hindrances in Fertilizers Marketing (A Comparative Study)

S. K. Rastogi^{a*}, Meenu Anand^b

^aDepartment of Commerce, Hindu College, Moradabad 244001 (U.P.) India
Email Id: mrsanjayrastogi@gmail.com

^bDepartment of Commerce, Hindu College, Moradabad 244001 (U.P.) India

Abstract

Fertilizers are considered as main input in agriculture. The purpose of fertilizer marketing is that the product which is produced reach the right place at right time with minimum costs. This research paper identifies the constraints in fertilizers marketing. For this purpose cluster sampling is done and the data is collected through schedule. A comparative study is done between private dealers & cooperatives in both the Tarai zone & Plane zone.

Keywords: Green Revolution, Fertilizer marketing.

PAPER/ARTICLE INFO

RECEIVED ON: 02/02/2018

ACCEPTED ON: 25/03/2018

Reference to this paper
should be made as follows:

S. K. Rastogi, Meenu Anand (2018), "Hindrances in Fertilizers Marketing (A Comparative Study)", *Int. J. of Trade and Commerce-IIARTC*, Vol. 7, No. 1, pp. 191-209

1. INTRODUCTION

Agriculture accounts for nearly one-fourth of India's GDP and more importantly about two-third of the country's population is dependent on agriculture and allied activities for their livelihood. India has inherited a rich and flourishing civilization spanning over thousands of years. Over 70% of the population is looking for agriculture, for their sustenance. It provides food to millions of people and raw materials to our industries.

Agriculture is the foundation on which the entire superstructure of the growth of industrial and other sectors of the economy has to stand. In order to raise the level of productivity a new agricultural strategy was adopted in India. This resulted in what came to be known as the "Green Revolution".

1.1 Green Revolution

The 'Green Revolution' attempts to produce food grains on a massive scale in the shortest period. The yield per acre increased tremendously in the case of certain crops like wheat. For the first time in India, the farmers have favourably responded to the new strategies of inputs. It kindled new hopes and confidence for the future. There was change in the mental attitude towards better farming. Farmers willingly applied science and technology by using high yielding varieties. The fear of the farmers about the vagaries of monsoon was removed by assured water supply.

1.2 Five year plans in India

India has completed about six decades of economic planning (1951 to 2009). India's experience with economic planning especially with agriculture is a unique one as one has been practicing economic planning within the framework of a democratic mixed economy. The annual average growth rate of agriculture during the various five year plans period from 1985 is given in Table 1. Deviations in food grains and agricultural output from its long term trend are determined among other factors with variations of monsoon around its long term trend. Furthermore, the negative impact of excess rainfall on such output appears to be not as high as the adverse impact of deficient rainfall.

The following table shows the annual average growth rate of agriculture from 1985 to 2007.

Table 1: Annual Average Growth Rate of Agriculture

Five year plans	Overall GDP Growth Rate (in %)	Agriculture Growth Rate (in %)
Seventh Plan (1985-1990)	6.0	3.2
Annual Plan (1990-1992)	3.4	1.3
Eighth Plan (1992-1997)	6.7	4.7
Ninth Plan (1997-2002)	5.5	2.1
Tenth Plan (2002-2007)	7.6	2.3
Eleventh Plan (2007-2012)	3.8	4.0
Twelfth Plan (2012-2017)	8.5	10

Source: Ministry of Agriculture

During the last seven decades the production of food grains in India has multiplied by more than three times and the country has emerged as a major exporter of food grains. The increase in production, however, has been limited to cereals alone. The production of pulses has been almost

stagnant between 12 and 15 million tonnes. Among the non-food grain crops, production of sugarcane and cotton has shown rising trends, whereas oilseeds (except for some recent breakthroughs) and jute have been slow to pick up.

1.3 Agricultural Inputs

Agriculture is mainly made up of cultivation practices by giving the following inputs viz., Seeds, Irrigation, Fertilizers, Pesticides, Mechanization and Power etc. Among them, fertilizers are to be considered as main input in terms of marketing which helps the farmers to boost up their cultivation.

1.4 Fertilizers

In India, the use of fertilizers started towards the end of the last century with fertilization of tea and coffee plantations. Fertilization of major cereal crops followed and it was slow to pick up. Initially, only a small quantity of indigenously produced super phosphate and some imported ammonium sulphate were essentially used by plantation industry. The use of fertilizer on food crops started in forties with the free distribution of ammonium sulphate to farmers under the "Grow more food campaign". The progress was still slow during the post-war years till the dawn of the planning era.

1.5 Fertilizer Marketing

Marketing in practice does not refer to any single activity such as selling, advertising or distribution. It involves the interaction of several business activities whose ultimate objective is the gratification of customer needs and desires. The marketing process does not end with the sale but continues till the satisfaction of the customer is obtained. It is now strongly held that marketing has a key role to play in bringing economic and social changes in developing nations. In an economy, which is geared to accelerated industrial development, it is not only necessary that we should produce more but also see that the products we produce reach the right places where they are needed at the right time with minimum costs.

2. STATEMENT OF THE PROBLEM

Agriculture is the backbone of the Indian Economy, although its relative significance has declined over the last decades. The rate of growth in agriculture has been less than the rate of growth in other sectors of the economy. The low rate of growth in agriculture is due to low level of productivity in this sector. According to official statistics, about 200 million children, men and women go to bed undernourished every night. This may be referred to "hidden-hunger" in the country. Therefore, agriculture in India will have to go a long way.

The standard of living of Indian agriculturists is below poverty line. They have limited resources. Very often the cultivators are not in a position to get their inputs especially fertilizer in the proper manner. It is therefore necessary that the fertilizers should be made available to them at the right place, at right time in adequate quantity of proper quality and at right prices. The distribution, infrastructure facilities, promotion and mass communication of these inputs are not adequate. The market and consumer of these products are unique.

The business of fertilizer marketing in developing countries like India must be understood and attended to accordingly, because it is a specialized job in terms of marketing. It is necessary to

make farmers feel safe about their agriculture and feel assured of a good return on their investment. Thus the problem of study is confined to the problems of the farmers in getting fertilizers efficiently and problems of the suppliers in supplying the fertilizers efficiently.

3. REVIEW OF LITERATURE

An attempt is made to present the literature related to the topic of research. Review of literature related to the Fertilisers Marketing, Uses of Fertilisers & DAP and Urea etc. Well-searched studies on the role of Fertiliser Marketing have been discussed here. In this section, a brief review of literature has been presented. Even though the various studies related to Fertilisers Marketing, need is there to study obstacles related to marketing of Fertilisers in India.

Khabarov and Obersteiner (2017), out of wide set of factors quoted in the literature and quantitatively analyzed in this paper, the most decisive factor in the Indian DAP import increase as supported by the official statistical data was domestic production drop in 2007–2008. This led to an increase in demand in the world market by about 2.6–3.1 M. tons of DAP (affecting also MAP and complex fertilizers) in 2008 as compared to the previous year, while China increased DAP supply over 2007–2008 and took protective measures in 2008 reducing its export by 0.6–1.2 M. tons as compared to the previous year. Two consecutive drops in 2007 and 2008 in Indian domestic phosphate fertilizer production of, respectively, –0.5 and –2.0 M. tons of DAP (as compared to 2006 production level), which is about 5% and 20% of global DAP market, respectively, had likely triggered the P-fertilizer price spike of 2008 affecting other fertilizers, or at least had a decisive impact on the price spike magnitude. Protective measures of DAP exporters lead to a tighter supply and magnified the price spike. The potential response of Indian farmers to growing prices was buffered out by a price-agnostic subsidy scheme that also magnified the peak. The reason for the Indian production drop was highly unfavourable conditions created for domestic producers as was later reported by the Department of Fertilizers: “The fertilizer sector worked in a highly regulated environment with cost of production and selling prices being determined by the Government of India.

Dahlin, Halbherr, Kurz, Nelles and Herbes (2016), explained in an effort to support the long-term viability of the bioenergy industry through the home gardening market. They conducted a discrete choice experiment (DCE), presenting 504 respondents with a total of 6048 product attribute choices in a simulated context that replicated the trade-off decisions made in the real market place. They analyzed the choice data using a hierarchical bayes estimate to generate part-worth utilities for fertilizer product attributes. They were able to quantify both purchasing preferences for fertilizer product attributes as well as the importance of each attribute to the perceived utility of a product. Results provided insights that should help product managers in the biogas industry develop marketing strategies to integrate digestive into a sustainable energy production system.

Ravinutala & Rotemberg (2016), showed that a lack of availability constraint, sale of urea creates a black market where farmers pay 60% higher prices on average. This lack of availability is due to overregulation of the urea market and the untargeted nature of the subsidy. They showed that a large amount of the subsidy is lost through inclusion errors and siphoning to industry. Before any supply-side deregulation, leakages need to be stymied. Since targeting farmers is not administratively feasible, they recommended a second-best approach of limiting the amount of

subsidized fertilizer available per Aadhaar card. Aadhaar penetration is very high in most states and a number of them have deployed point-of-sale devices for authentication.

Mishra (2013), clarified that in Hoshangabad district IFFCO and Kissan (NFL) brands leading the market having maximum market share of Urea fertilizer, IPL and Uttam brands leading the market having maximum market share of DAP fertilizer, IPL and Uttam brands leading the market with maximum market share of MOP fertilizer, Shriram and Buland brands leading the market having maximum market share of SSP fertilizer and IPL and Coromandel (Gromor, Godavari) brands leading the market with maximum market share of complex fertilizer. The farmers of study area fulfilled their maximum fertilizer requirement by purchasing fertilizer from co-operative society. The awareness across the selected brand of fertilizer was not equal. This promotional activity was followed by two companies Chambal Chemicals and Fertilizers Limited and Rastriya Chemicals and Fertilizer Limited.

They suggested that the brand preference of chemical fertilizers varies from product to product (Urea, DAP, MOP, SSP and Complex fertilizer). No single brand of fertilizer was found to be market leader among product mix and for all reason. Therefore, companies instead of pushing one brand may sell more brands. The small companies cannot compete with big companies due to high cost of research and development, higher production capacity, marketing and other costs. Hence, the small firms may merge with companies to take advantage of economy of scale. The government may organize compulsory training programme for the farmers, to make them aware about soil testing and ideal dosage of fertilizer usage. It will help to optimize the consumption of fertilizer.

Smith and Siciliano (2015) made it clear that complex and inter-related factors explain the excessive use of fertilizer observed in many intensive farming systems in China, and hence act as barriers to development of a comprehensive policy and intervention framework for mitigation of diffuse water pollution from agriculture (DWPA). This review provided an original and contemporary synthesis of these factors that is broader, deeper and more inter-related than existing assessments. The analysis confirmed that DWPA cannot be addressed by single regulatory or policy measures. There would be a need to develop a mitigation framework that encompasses central policy directives, reform in governance at local level, an enabling regulatory environment, horizontal and vertical coordination in food supply chains, unbiased incentives for efficient fertilizer use and protection of water resources, enhanced agricultural, food safety and environmental education for farmers and consumers, and engagement of multiple actors beyond government.

Taylor and Moss (2013), observed the fact that competition issues involving fertilizer extend well beyond traditional antitrust pricing, output, and innovation concerns. They also implicate food sustainability, human welfare, and economic and political stability. They emphasized that policy makers heed the call to address the problem, it remains imperative that competition policy be complemented constructively with broader public policy approaches. For example, a policy of encouraging development of cost-effective nutrient recycling may have triple benefits of limiting cartel pricing, making industrial farming more sustainable, and reducing environmental costs associated with fertilizer production. Moreover, because action by any single competition or other governmental authority may be inadequate to restore competition in fertilizer markets, a

coordinated, concerted approach to enforcement will be required at both national and international levels. Such an approach is more likely to deal with the reality that fertilizer producers have a history and corporate sociology of collusion and thus no longer need to explicitly communicate to continue cartel behaviour. Simply breaking up export associations such as *PhosChem* therefore may not by itself establish competition in fertilizer markets. More creative remedial approaches may be needed.

Siddiqui, Ahmed, Manan and Choudhry (2013) have drawn guidelines for the effective branding of the fertilizers. In addition to what the companies were doing that is to work on the naming conventions they should start working on these given things in order to have the effective branding and to retain the customer. These points had erupted through our survey as the potential criteria for the brand building if the sudden increase in price has occurred in your most preferred brands; will you still go for that one? A majority had said they would go for their most preferred brand even if the price is increased due to whatever reason. The importance of price is rather neglected by the Pakistani market. So the brand managers should search alternative way for branding their product.

4. OBJECTIVES OF THE STUDY

The following objectives were established for the purpose of the present study in order to make a comparative analysis on fertilizers marketing and consumption patterns of farmers in different ecological zones viz., Tarai Zone (Pilibhit District) and Plane Zone (Moradabad District). Such a comparison will help both the zones to identify the missing links and bridge the gaps of fertilizer marketing system.

- To investigate into the specific nature of fertilizer marketing and the fertilizer distribution network system.
- To examine the effectiveness of fertilizers marketing by making comparative study of a Tarai Zone with a Plane Zone to ascertain its impact on yield.
- To make suggestions to ensure effective distribution and proper delivery of fertilizers by improving the functioning of the network system.

5. HYPOTHESES

To verify the validity of inferences that are derived from the analysis of data, following hypotheses are formulated for this study.

1. There is a no difference between Tarai Zone and Plane Zone with regard to the hindrances regarding fertiliser marketing especially – transport of fertilisers from manufacturer to trader; and promotional activities by manufacturer.

6. METHODOLOGY

6.1 Sampling

The cluster sampling technique is used where the entire population is divided into groups or clusters and a random sample of these clusters are selected. All observations in the selected clusters are included in the sample. This technique may well be more practical and a cluster sample could be taken by identifying the different groups as clusters in the study area.

A Tarai Zone and a Plane Zone have been chosen as the survey areas. The fertilizer dealers have been grouped as per the prescribed terminologies and a random sample of their group was selected for the purpose of research. A comparative study has been made in both districts.

6.2 Data Instrument

The data has been collected through schedule from fertilizer dealers to get relevant information for the study. A schedule was prepared to study the fertilizer marketing in the study area. Questions were asked under the following headings: General information, transport, advertisement and sales promotion.

6.3 Analysis of the Data

After collecting the data, the researcher had turned to the task of analyzing them. The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences. The following research tools had been applied by the researcher for analyzing the data and drafting statistical conclusions to meet the objectives of the study.

- Chi-square test
- Students 't' test
- ANOVA followed by Duncan Multiple Range Test (DMRT)
- Friedman test
- Correlation co-efficient
- Discriminant analysis

Statistical Package for Social Sciences (SPSS) was used to analyze the data.

7. DATA ANALYSIS

The Marketing activities help the goods to start the journey from the place of production to the place of consumption. During the journey there are so many hindrances viz., personal hindrance, place hindrance, time hindrance, knowledge hindrance and financial hindrance. These problems or hindrances are overcome by the help of various aids of trade namely, Middlemen (wholesalers, retailers, etc.) Transport, Warehousing, Advertisement, Banks and financial sources. The functional approach to the study of marketing splits the whole process into the above several smaller activities. Hence, the major areas of fertilizer marketing have been identified and analyzed with the help of Chi-square test. It is used to make the comparative study of fertilizer marketing done by the private dealers and co-operatives in both the Tarai Zone and the Plane Zones. In this research paper, we have discussed only logistic and sales promotional obstacles of fertilizers marketing. Hence data analysis is divided broadly into three sections and in each section the comparative study has been carried out.

- **Section I:** Describes the socio-demographic features of the fertilizer dealers;
- **Section III:** Describes the transportation of fertilizers; and
- **Section IV:** Describes the advertisement and the sales promotional activities.

7.1 Section I: Socio-Demographic Details of the Fertilizer Dealers

The socio-demographic details have the impact on the performance and the development of the fertilizer business. Various dimensions taken for collecting the personal details are age, education,

nature of business, experience, business organization and dealing of agricultural inputs. The Profile of the fertilizer dealers are given below in a tabulated form by way of percentage analysis and Chi-square analysis to know the significant difference between the Tarai Zone and the Plane Zone.

7.1.1 Educational Qualification of the Fertilizer Dealers

The education keeps the fertilizer dealers aware of the combination of fertilizers and its usage. It helps the dealers to understand the needs of the farmers. It identifies the selling techniques and the business development practices. Table 2 gives the details of the frequency distribution of the fertilizer dealers surveyed, based on their education.

Table 2: Educational Qualification of Fertilizer Dealers

Educational qualification	Private dealers		Total	Chi square Value	P Value
	Tarai Zone	Plane Zone			
Higher Secondary	8	5	13	7.961	0.018*
Under-Graduation	27	16	43		
Post-Graduation	15	29	44		
Total	50	50	100		

Source : Primary Data, Computed by the Researcher

* denotes significant at 5% level

The above Table 2 depicts that within the Tarai Zone, most of the fertilizer dealers (54%) are Under-graduates and 30% of the dealers are Post-graduates and the remaining 16% have H.Sc. education. Within the Plane Zone, most of the fertilizer dealers (58%) are Post-graduates and 32% of the dealers are Under-graduates. While making the Comparative Study in Table 2, with the help of Chi-square analysis, the 'p' value is less than 0.05. Hence it is proved that there is a relationship between the educational qualification of the dealers and the area of the study. While identifying the relationship through the Table, it is found that in the Tarai Zone most of the dealers (54%) are Under-graduates and in the Plane Zone, most of the dealers (58%) are Post-graduates.

7.1.2 Age of the Fertilizer Dealers.

The age of a person plays an important role in business. The progressive outlook, the innovative spirit, the risk taking ability and so on, is closely related to the age factor of the Fertilizer Dealers. Table 3 presents the age details of the Fertilizer Dealers surveyed.

Table 3: Age Group of the Fertilizer Dealers

Age Group (in years)	Private dealers		Total	Chi square Value	P Value
	Tarai Zone	Plane Zone			
Below 40	13	12	25	7.310	0.026*
40-45	18	30	48		
Above 45	19	8	27		
Total	50	50	100		

Source: Primary Data, Computed by the Researcher

* denotes significant at 5% level

From the above Table 3 it is seen that within the Tarai Zone, 38% of the private dealers studied belong to the age group of 45 years and above and 36% are in the age group of 40 years to 45 years. 26% comprise the age group of less than 40 years. Within the Plane Zone, most of the dealers i.e., 60% are aged between 40 years and 45 years and 24% are young dealers in the age group below 40 years and only 16% of the private dealers fall under 45 years and above age category.

It can be seen from the table 3 that the 'p' value is less than 0.05. Hence it is proved that there is a relationship between the age of the dealers and the area of the study. While identifying the relationship through the Table, it is found that comparatively, in the Tarai Zone more number of dealers (38%) fall under above 45 years age category which is only 16% in the Plane Zone. In the Plane Zone most of the farmers (60%) belong to the age category of 40 years to 45 years.

7.1.3 Nature of Business of the Fertilizer Dealers

The farmers are scattered in many places. The gap between the producer and the farmer is shrunk by the channel of distribution. The fertilizer marketing distribution is done by the wholesalers who get fertilizers from the manufacturers, the retailers who get fertilizers from the wholesalers and the co-operative societies. The private dealers will do either wholesale business or retail business or both. The co-operatives do the retail business by getting the fertilizers from the Co-operative Marketing Federations. The nature of business done by the fertilizer dealers are shown in the following Table 4

Table 4: Nature of Business of The Fertilizer Dealers

Nature of business	Tarai Zone		Plane Zone		Total	Chi square value	P value
	Private	Co-op	Private	Co-op.			
Wholesale	5	0	12	0	17	93.672	0.000**
Retail	37	50	14	50	151		
Both	8	0	24	0	32		
Total	50	50	50	50	200		

*Source: Primary Data, Computed by the Researcher; ** denotes significant at 1% level*

Table 4 shows that a majority of the dealers in the Tarai Zone, consisting of 74% of the population studied have been doing retail business. 16% have been doing both wholesale and retail business and the remaining 10% have been doing wholesale business. Within Plane Zone, most of the dealers i.e., 48% have been doing both wholesale and retail business. 28% of the dealers have been doing retail business and 24% have been doing wholesale business. In both the zones, the co-operative societies have been doing retail business. From the Table 4, it can be seen that the 'p' value is less than 0.01 and it is proved that there is a relationship between the nature of business and the area of the study. While analyzing the relationship, it can be seen from the Table that in the Tarai Zone most of the private dealers (24.5%) have been doing retail business compared to the Plane Zone (9.3% only) whereas in the Plane Zone, most of the dealers (75%) have been doing both the business compared to the Tarai Zone (25% only).

71.4. Experience of the Fertilizer Dealers in Business

The classification of the fertilizer traders on the basis of experience in business is studied by grouping them as below 20 years, 20-40 years and above 40 years and the frequency distribution is given in Table 5.

Table 5: Experience of Fertilizer Dealers in Business

Experience in business	Tarai Zone		Plane Zone		Total	Chi square Value	P Value
	Private	Co-op	Private	Co-op.			
Below 20	35	0	24	0	59	120.886	0.000**
20-40	15	21	26	15	77		
Above 40	0	29	0	35	64		
Total	50	50	50	50	200		

Source : Primary Data, Computed by the Researcher

** denotes significant at 1% level

From the Table 5, it can be inferred that within the Tarai Zone, most of the sample private dealers constituting 70% have less than 20 years of experience in business and remaining 30% have run the business for about 20- 40 years. 58% of the Co-operatives have experience for above 20 years and 42% have 20 to 40 years of experience in the Tarai Zone. In the Plane Zone, 52% of private dealers have established their Business for 20-40 years and remaining 48% have less than 20 years of experience. 70% of the Co-operatives have more than 40 years of experience and 30% have 20 to 40 years of experience in Business. From the Table 5, it is inferred that the 'p' value is less than 0.01 and it is proved that there is a relationship between the experience of the Fertilizer Dealers in Business and the Study area. While studying the relationship, it can be seen that in the Tarai Zone most of the private dealers (59.3%) have less than 20 years of experience. But more dealers in the Plane Zone (33.8%) have 20-40 years of experience compared to the Tarai Zone. In the Plane Zone more number of co-operatives (54.7 %) has more than 40 years of experience.

7.1.5 Business Organization of the Fertilizer Dealers

The Organization of business will help the dealers in raising the required capital and provides opportunities for the development. The organization of business conducted by the fertilizer dealers is given.

The Table 6 shows the business organization of private traders and co-operatives. Within the Tarai Zone, it can be seen that majority of 66% of the business are partnership form of organization and the remaining 34% of the traders surveyed are the sole proprietors. But in the case of the Plane Zone, 56% have been doing partnership business and 44% have been the sole proprietors. The co-operative societies have been registered under the co-operative form of organization in both the zones.

Table 6: Business Organization of Fertilizer Dealers

Business organization	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private	Co-op	Private	Co-op			
Proprietorship	17	0	22	0	39	236.33	0.000**
Partnership	33	0	28	0	61		
Cooperatives	0	50	0	50	100		
Total	50	50	50	50	200		

Source : Primary Data, Computed by the Researcher; ** significant at 1% level.

As the fertilizer distribution cannot be undertaken on a large scale, owing to the geographical limitations, no corporate entity is involved in this field. From the Table 6, it can be seen that the

'p' value is less than 0.01 and it is proved at 99% level of significance that there is a relationship between the business organization and the area of the study.

While analyzing the relationship, it can be seen from the Table that in the Tarai zone most of the private dealers (54.1%) have been doing partnership business compared to the Plane Zone (45.9%) whereas in the Plane Zone, most of the dealers (56.4%) have been sole proprietors compared to the Tarai Zone (43.6%). The co-operative societies come under the co-operative form of organization.

7.1.6 Dealing of Agricultural Inputs of the Fertilizer Dealers

It may not be economical for the dealers to distribute only one input namely the fertilizer. On the other hand, if they combine other inputs like seeds, pesticides, agricultural implements etc., it would improve their business. The Frequency distribution based upon dealing of inputs of the fertilizer dealers is given in Table 7.

Table 7: Dealing of Agricultural Inputs of Fertilizer Dealers

Business organization	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private	Co-op	Private	Co-op			
Fertilizer alone	23	0	10	0	33	51.787	0.000**
Fertilizer & Pesticides	24	30	26	34	114		
Fertilizer, Pesticides & Agri.- appliances	3	20	14	16	53		
Total	50	50	50	50	200		

Source: Primary Data, Computed by the Researcher

*** denotes significant at 1% level*

Table 7 clearly shows that within the Tarai Zone 48 % of the private dealers dealt with fertilizers and pesticides followed by 46% who have been dealing with fertilizer alone. Only 6% of the dealers have been selling fertilizers, pesticides and agricultural appliances. 40% of the Tarai zone co-operatives have been in the dealing of fertilizers, pesticides and agricultural appliances. Within the Plane Zone, about 52% dealt with the second category that is selling the pesticides along with the fertilizers. 28% of the sample dealers have been using all the three inputs for sale. 68% of the Co-operatives have been dealing with the fertilizers and the pesticides.

From the Table 7, it can be inferred that the 'p' value is less than 0.01 and it is proved that there is a relationship between the dealing of the inputs and the area of study. While analyzing the relationship, it can be seen from the Table that in the Tarai Zone a majority of the private dealers (69.7%) have been dealing with the fertilizers alone compared to the Plane Zone. Whereas, in the Plane Zone, most of the dealers (26.4%) could deal with all the three inputs as compared to the Tarai Zone which is 5.7% only. The Co-operatives are far better than the private dealers in both the zones, since most of them have been dealing with all the inputs needed for the farmers.

7.2 Section II: Transportation

The hindrance of place is also removed by transport. The physical supply or the physical distribution of goods is one of the functions of Marketing. Transportation is the key link and the nervous system of marketing. It encourages the business by the mobilization of goods. It helps for

the physical movement of the goods from one place to another. The fertilizers dealers have been taking the fertilizers either from the manufacturers or the wholesalers.

The types of transport used, the transport freight, the distance between the authorized godown and the shop have been analyzed in this section. Whether the fertilizer dealers have been getting adequate transport facilities or not has also been analyzed in this Section.

7.2.1 Types of the Transport Used

In the fertilizer distribution business, the transport has to play a crucial role. The success of this business depends on the efficient transport service. For Co-operatives, this service is provided by the Co-operative Marketing Federations. The mode of transport which is used to transport the fertilizers is shown in the Table 8.

Table 8: Types of Transport Used

Type of transport	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private dealers	Co-operatives	Private dealers	Co-operatives			
Lorry	46	44	39	45	174	3.654	0.301
Tractors	4	6	11	5	26		
Total	50	50	50	50	200		

Source : Primary Data, Computed by the Researcher

The Table 8 shows the types of transport used by the fertilizer dealers. It can be seen that within the Tarai Zone 96% of the private dealers use Lorry and only 4% use tractors to carry their fertilizers. But Within the Plane Zone, 78% of the private dealers have taken lorry to transport their fertilizers and the remaining 22% have used tractors. Nearly 90% of the Co-operatives of both the zones take the fertilizers through Lorry and the service is rendered by Co-operative Marketing Federations. While analyzing the 'p' value in the Table 8, it is more than 0.05. So it is proved that there is no relationship between the types of transport used and the area of the study.

7.2.2 Availing Adequate Transport Facilities

The role of transport in the sphere of agriculture cannot be over - emphasized. The transport has a great bearing on distribution. The business development would not have taken place if there had been inadequate transport facilities. Hence it is necessary to analyze the adequacy of the transport facilities availed by the fertilizer dealers. Whether the fertilizer traders have been availing adequate transport facilities or not has been analyzed in the Table 9.

It can be seen from the above Table 9 that within the Tarai Zone, 52% of the private dealers do not have adequate transport facilities. 48% of the private dealers have been availing necessary transport facilities. All the Co-operatives of the Tarai Zone have been getting the required transport facilities. Within the Plane Zone, 68% of the private dealers have been enjoying the adequate transport facilities for their fertilizer business. The remaining 32% of the private dealers have difficulties in getting the transport at the needed time. Only 8% of the Plane Zone Co-operatives have not got the adequate transport facilities.

Table 9: Availing Adequate Transport Facilities

Availing adequate transport facilities	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private dealers	Co-operatives	Private dealers	Co-operatives			
Yes	24	50	34	46	154	47.318	0.000**
No	26	0	16	4	46		
Total	50	50	50	50	200		

*Source: Primary Data, Computed by the Researcher; ** denotes significant at 1% level*

From the Table 9, it can be seen that the 'p' value is less than 0.01 and it is proved that there is a relationship between the availing adequate transport facilities and the area of the Study. When the researcher analyzed the relationship, it is inferred that, compared to the Plane Zone (22.1%), more Tarai Zone private dealers (15.6%) do not have the adequate transport facilities. But all the Co-operatives of the Tarai Zone have the adequate transport to do their fertilizer marketing. Compared to the Plane Zone (22.1%), more Tarai Zone private dealers (15.6%) do not have the adequate transport facilities. But all the Co-operatives of the Tarai Zone have adequate transport to do their fertilizer marketing.

7.2.3 Transport Freight paid by the Fertilizer Dealers

For availing the transport facilities, the fertilizer dealers have to pay the transport freight and it is an establishment expense for Marketing. The frequency distribution of the transport freight paid by the fertilizer dealers is shown in the Table 10.

Table 10: Transport Freight Paid by the Fertilizer Dealers

Transport freight (in Rs.)	Private Dealers		Total	Chi square value	P Value
	Tarai Zone	Plane Zone			
Upto 150	11	22	33	5.661	0.058
151 - 200	23	18	41		
201 - 250	16	10	26		
Total	50	50	100		

Source: Primary Data, Computed by the Researcher

From the Table 10, it can be analyzed that within the Tarai Zone, 46% of the private dealers surveyed have been paying from Rs.151 to Rs.200 as the transport cost followed by 32% of the private dealers who have to pay Rs.201 to Rs.250. The remaining 22% paid up to Rs.150 as the transport freight to carry their fertilizers. Within the Plane Zone, 44% of the private dealers paid up to Rs.150 to transport their fertilizers. 36% of the sample private dealers paid from Rs.151 to Rs.200 and only 20% of the fertilizer dealers paid above Rs.200. While analyzing the 'p' value in the Table 10, it can be seen that the 'p' value is more than 0.05. So it can be concluded that there is no relationship between the transport freight paid and the area of the study.

7.2.4 Distance Between the nearest Authorized Godown and the Shop

The distance between the nearest authorized godown and the shop has to be measured. If it is located far away, it may involve one more additional transport cost. The details have been shown in the Table 11.

The Table 11 shows the distance between the authorized godown and the shop. Within the Tarai Zone, 40% of the private dealers have to go more than 40 km to reach the nearest authorized godown from their shop. The distance of 42% of the private dealers fall under 25km to 40 km. 36% in each category viz., 25km to 40 km and more than 40 kms have fallen for the Co-operatives.

Table 11: Distance Between Nearest Authorized Godown and the Shop

Distance in Km.	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private dealers	Co-operatives	Private dealers	Co-operatives			
Less than 25	6	14	5	15	40	18.066	0.006**
25-40	21	18	18	25	82		
More than 40	23	18	27	10	78		
Total	50	50	50	50	200		

*Source : Primary Data, Computed by the Researcher ** denotes significant at 1% level.*

Within the Plane Zone, as many as 54% of the private dealers have the distance of more than 40 km from their shop to the authorized godown. 36% of the private dealers came under the category 25 km to 40 km. distance. Among the Plane Zone co-operatives 50% of them have to cover the distance from 25km to 40 km followed by 30% who have to cover the distance of less than 25 km.

While analyzing the 'p' value in the Table 11, it can be seen that it is less than 0.01 and it is proved that there is relationship between distance between the authorized godown and the shop. It can be seen that more private dealers (34.6%) have to cover more than 40 km compared to the Tarai Zone (29.5%). But it is vice versa in the case of co-operatives. More Tarai Zone Co-operatives has the distance of more than 40 km. (23.1%) than the Plane Zone Co-operatives (12.8%).

7.3 Section III: Advertisement and Sales Promotion

The hindrance of knowledge is removed by the advertisement and the sales promotion. Advertising is the mass communication of the information intended to persuade the buyers as to maximize the profits. The Advertisement reaches the masses. The sales promotions are defined as those marketing activities which stimulate the consumer purchasing and the dealer effectiveness. Both advertisements and sales promotional activities are very essential in marketing. The types of sales promotional activities, the advertisement materials have been analyzed in this section. Whether the manufacturers help in the sales promotion or not has also been analyzed.

7.3.1. Sales Promotional Activities of Fertilize Dealers

Advertising and sales promotions are the most challenging part of the marketing job in the rural areas of India. How many of them were doing the sales promotional activities was shown in the Table 12.

Table 12: Sales Promotional Activities of the Fertilizer Dealers

Sales promotional Activities	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private dealers	Co-operatives	Private dealers	Co-operatives			
Yes	21	40	35	33	129	17.011	0.000**
No	29	10	15	17	71		
Total	50	50	50	50	200		

*Source : Primary Data, Computed by the Researcher ** denotes significant at 1% level*

From the Table 12, it can be understood that within the Tarai Zone, 58% of the private dealers do not carry out any sales promotional activities and 42% of them have been doing the sales promotional activities to boost up their fertilizer sales. Most of the Co-operative societies of the Tarai Zone i.e., 80% have been promoting their sales by the sales promotional measures. Within the Plane Zone, as many as 70% of the private dealers concentrated on the sales promotion. 66% of the Plane Zone Co-operatives has been doing the sales promotional activities.

7.3.2 Types of Promotional Activities of the Dealers

The fertilizer dealers have been improving their sales with the help of advertisement and the sales promotional measures. They promote their sales with the help of newspaper advertising, wall display, posters and slides. Such a type of advertisement gives the knowledge about the effective utilization of the fertilizers at the right time to enhance the best cultivation practices. The advertisement and the salesmanship help in informing the consumers (farmers) about the availability and the usefulness of the fertilizers. Table 13 gives the types of the promotional activities of dealers.

Table 13: Promotional Activities of the Fertilizer Dealers

Types of sales promotion	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private dealers	Co-operatives	Private dealers	Co-operatives			
Newspaper	0	21	0	17	38	88.975	0.000**
Wall Display	6	19	11	16	52		
Posters	15	0	20	0	35		
Slides	0	0	4	0	4		
Total	21	40	35	33	129		

*Source: Primary Data, Computed by the Researcher; ** denotes significant at 1% level.*

From the Table 13, it can be inferred that out of 200 samples, 129 fertilizer dealers have made the sales promotional activities. Among them, it can be seen from the Table 13 that within the Tarai Zone, 71% were promoting with the help of posters and remaining 29% used wall display. The Tarai Zone Co-operatives, i.e., 53% of them, have been using Newspaper advertising and the remaining used wall display for the sales increase. Within the Plane Zone 57% have believed in the posters and the wall display has been done by 31% of the private dealers. 51% of the Plane Zone Co-operatives have been targeting the farmers with the help of Newspaper advertising. It can be analyzed from the Table 13 that the 'p' value is less than 0.01 and hence it is proved that there is a relationship between the types of the promotional activities and the Area of the Study. It can be seen that in the Tarai Zone, more Co-operatives (55.3%) were doing their sales promotion with the help of Newspaper advertising compared to the Plane Zone (44.7%). The advertisements through posters were popular and more in the Plane Zone (57%) compared to the Tarai Zone (43%) by the private dealers. Wall display is very popular in the Tarai Zone Co-operative Societies (37%) among the other types of the fertilizer dealers.

7.3.3 Manufacturers' Support in Advertising

The fertilizer manufacturers support the dealers in advertising their fertilizers. They give the advertisement materials, sign hoardings, leaflets, and wall display facilities etc., to the fertilizer dealers.

Table 14: Manufacturers' Support in Advertising

Manufacturers' help	Tarai Zone		Plane Zone		Total	Chi square value	P Value
	Private dealers	Co-operatives	Private dealers	Co-operatives			
Yes	43	50	40	50	183	19.736	0.000**
No	7	0	10	0	17		
Total	50	50	50	50	200		

Source : Primary Data, Computed by the Researcher; ** significant at 1% level

The Table 14 shows clearly that all the co-operative societies in both zones have been getting the support from their manufacturers in advertising their products. Within the Tarai Zone, majority of the private dealers, i.e., 86% have got the help of the manufacturers in advertising. The remaining 14% of the private dealers have not been assisted by the manufacturers. In the Plane Zone also, 80% of the private dealers have enjoyed the support of the manufacturers in advertising and sales promotion.

The Table 14 shows that the 'p' value is less than 0.01 and hence it is proved that there is a relationship between the manufacturers' support in advertising and the area of the study. It has been found out that in the Tarai Zone more private dealers have been getting the support in advertising from the manufacturers compared to the Plane Zone to some extent.

7.4 Discriminant Analysis - Cluster Justification

In this analysis, the test of equality of group Means, Canonical correlation Co-efficient and Wilks Lamda co-efficient are displayed to prove the cluster justification.

Table 15: Test of Equality of Group Mean for the Functions of Marketing

Features of Marketing	Wilks' Lambda	F	df ₁	df ₂	P Value
Educational Qualification	0.939	6.364	1	98	0.013
Age Group	0.988	1.225	1	98	0.271
Nature of Business	0.983	1.728	1	98	0.192
Experience in Business in years	0.950	5.160	1	98	0.025
Dealing of Inputs	0.924	8.111	1	98	0.005
Competitions facing	0.976	2.389	1	98	0.125
Transport facilities	0.930	7.361	1	98	0.008
Distance coverage to reach shop	0.903	10.470	1	98	0.002
Enjoying adequate transport facilities	0.959	4.195	1	98	0.043
Transport freight	0.951	5.092	1	98	0.026
Sales promotional activities	0.920	8.469	1	98	0.004
Help from Manufacturing companies	0.994	0.629	1	98	0.430
More effective advertisement material	0.935	6.866	1	98	0.010
Sales promotional activities by manufacturing companies	0.940	6.255	1	98	0.014

From the above Table 15, the Equality of Group Mean for all the features of marketing can be seen. The classification is mainly done with the help of various features of marketing with four different group of fertilizer traders. So it is indispensable to establish a relationship between the cluster and the factor scores. The exploitation of Canonical Correlation is highly useful in

establishing frequencies of clusters and factor scores in the form of a Linear Discriminant Function.

Table 16: Eigen Values of Functions of the Marketing

Function	Eigen values	Percentage of Variance	Cumulative Percentage	Canonical Correlation
1	5.287	100.0	100.0	0.917

Source : Summary of Canonical Discriminant Functions

Table 16 gives the Eigen value 5.287 with individual Variance of 100 % for the discriminant function. This function established a profound relationship between the fertilizer dealers in both the zones (Tarai Zone and Plane Zone) in the form of Canonical Correlation Co-efficient namely 0.917. This value is also statistically significant. To verify the effect of the Discriminant function, the researcher used Wilk's Lambda parameter.

Table 17: Wilks' Lambda values of the Functions of Marketing

Test of Function	Wilks' Lambda	Chi-square	Df	P - value
1	0.159	168.222	13	0.000

Source : Summary of Canonical Discriminant Functions

The Table 17 clearly identifies that the test of functions for the Discriminant Function has the Wilks' Lambda value as 0.159 and the Chi square value is as 168.222. The cumulative effect is statistically significant. Therefore, it is concluded that the Discriminant Function perfectly match the Functions of Marketing and the two zones. This function is further explored by the classification of Function co-efficient.

Table 18: Classification of Function Co-efficient

Functions	Group	
	Tarai Zone Dealer	Plane Zone Dealer
Adequate Transport facilities	11.749	10.878
Sales promotional activities	14.487	16.969

Fisher's Linear Discriminant Function

From the Table 18, it can be seen that the above seven factors are taken for the classification of results through Fisher's Linear Discriminant Function. This Table clearly indicates the consistency of various functions of marketing in both the zones. They differ in all the aspects of Marketing and hence the clusters are being justified.

Table 19: Classification Results

Function	Group	Predicted Group Membership		Total
		Tarai Zone dealer	Plane Zone dealer	
Count	Tarai Zone Dealer	48	2	50
	Plane Zone Dealer	0	50	50
Percentage	Tarai Zone Dealer	96.0	4.0	100.0
	Plane Zone dealer	0.0	100.0	100.0

98.0 % of original grouped cases correctly classified

From the above Table 19, it is clearly proved that 98.0% of the original grouped cases are correctly classified. The classification of samples is originally grouped as per the terminology and hence the clusters are being justified.

8. CONCLUSION

Marketing is a very important aspect in business since it contributes greatly to the success of the organization. Production and distribution depend largely on Marketing. It is the process of introducing and promoting the product or service into the market. The major marketing management decisions can be classified in one of the major categories viz., Product, Price, Place and Promotion. The variables are known as the Marketing Mix. The variables have to be controlled in order to achieve the goals of the business.

Hence, Fertilizer Marketing is helpful to the farmers to get their fertilizers for their cultivation. Fertilizer Marketing is the process of planning and executing the conception, promotion and distribution of fertilizers. The study of marketing of fertilizers is important to the basics of running a fertilizer business. Today most nations, regardless of their degree of economic development or their political philosophy have been recognizing the importance of the functions of marketing.

REFERENCE

Articles

- [1]. **Dahlin, J., Halbherr V., Kurz P., Nelles M. and Herbes C. (2016)**, 'Marketing Green Fertilizers: Insights into Consumer Preferences', MDPI, Basel, Switzerland. Nov. 2016
- [2]. **Khabarov N. and Obersteiner M. (2017)**, 'Global Phosphorus Fertilizer Market and National Policies: A Case Study Revisiting the 2008 Price Peak', Global P-Fertilizer Market and Policies Frontiers in Nutrition, www.frontiersin.org, June 2017, Volume 4, Article 22
- [3]. **Mishra P. (2013)**, 'An Analysis of Fertilizer Brand Preference by Farmers - A Case Study in Hoshangabad District of Madhya Pradesh', Department of Agricultural Marketing, Co-Operation and Business Management University of Agricultural Sciences, Bangalore
- [4]. **Ravintala S. (2016)**, 'Redesigning India's Urea Policy', Ph.D. Thesis under the supervision of Prof. Rotemberg, John F. Kennedy School of Government, Harvard University.
- [5]. **Siddiqui, Ahmed, Manan and Choudhry (2013)**, 'Fertilizer Branding in Pakistan', International Journal of Technology Marketing, Vol. 3, Issue 9, September 2013,
- [6]. **Smith L.E.D., and Siciliano G., (2015)**, 'A Comprehensive Review of Constraints to Improved Management of Fertilizers in China and Mitigation of Diffuse Water Pollution from Agriculture', ELSEVIER, Agric. Ecosyst. Environ. (2015), <http://dx.doi.org/10.1016/j.agee.2015.02.016>
- [7]. **Taylor and Moss (2013)**, The Fertilizer Oligopoly: The case for Global Antitrust Enforcement, American Antitrust Institute, New York, 2013

Books

- [1]. **Acharya S.S. and Agarwal N. L., (2011)**, 'Agricultural Marketing in India', Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, 5th Ed., Page 572



- [2]. **Pandey, I.M. "Financial Management"**, Vikas Publishing House Pvt. Ltd, pp108-157,808-939
- [3]. **Kothari and Garg, (2016)**, Research Methodology: Method and Techniques, New Age International Publishers, New Delhi, 3rd Ed.

Reports

- [1]. 60th Annual Report, 2014-15, The Fertiliser Association of India, New Delhi
- [2]. 61st Annual Report, 2015-16, The Fertiliser Association of India, New Delhi
- [3]. 62nd Annual Report, 2016-17, The Fertiliser Association of India, New Delhi
- [4]. Dr MP Sukumaran Nair, India's fertilizer market, Centre for Green Technology & Management, India,
- [5]. Indian Fertilizer Scenario 2013, Department Of Fertilizers, Ministry of Chemicals and Fertilizers, Government of India

Websites

- [1]. www.faidelhi.org
- [2]. www.fert.nic.in
- [3]. www.iffco.in
- [4]. www.indianfertilizer.com
- [5]. www.moneycontrol.com