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Research Article

STUDY OF STRUCTURE, CONDUCT AND PERFORMANCE OF CABBAGE SEEDMARKET IN HASSAN DISTRICT OF KARNATAKA

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Abstract- The study was carried out in Hassan district to know the structure of market, conduct and performance of market for cabbage vegetable seeds. Convenient sampling technique was adopted for this study. Hassan district of Karnataka was selected and structured questionnaires administered to dealers, nurserymen and distributors for collecting the required data. Four vegetable seed companies were selected based on the higher market sales volume. Herschman-Herfindal index model was used for analyzing the market structure. Descriptive statistics were used to analyse the market conduct and performance. The Herschman-Herfindal index, for determining the level of concentration in relation to the structure of the cabbage vegetable seeds in the market shown that there was high degree of market concentration in the district, this suggested no easy way for new firms to enter market. The promotional activities of different vegetables seeds companies were calculated by percentages and to know the market performance, sixteen parameters ranging from product display to distributors depth were devised during the study. Each company was ranked on 1 to 5 scales. A comparison on individual parameter was done and the overall performance of each of the company was calculated with help of a grid. The study indicated that, the company had employed agricultural graduates in the district who had created good relationship with the dealers, nurserymen and vendors in the market. The overall performance of Syngenta seeds was topmost, followed by Seminis seeds, Mahyco seeds and Nunhems seeds.

Keywords-Market, Market structure, Market concentration, Market conduct and Market performance.

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Introduction

Market structure comprised of size, design and number of firms in the industry like number of dealers, distributors, retailers, customers, products and price range. The market concentration would be the major indicator of market structure. In the present the market concentration was estimated using the Herschman-Herfindal Index as found in many earlier literatures on market structure. Generally, market conduct can be assessed by studying the composition of products, promotion activities, pricing mechanism and distribution strategies. However, in the present market conduct was attempted using major promotional activities undertaken by the cabbage seed companies. It is having well accepted that degree of concentration and performance are inversely related. Thus, firms in more concentrated industries will earn higher profits than firms operating in less concentrated industries, irrespective of their efficiency [1]. Seed is the most important input component of productive agriculture. In the significant advances that India made in agriculture in the last four decades, the role of the seed sector has been substantial. The growth in agricultural productivity has its deep roots in growth and expansion of seed industry. To meet the increasing demand for high yielding and hybrids seeds, the stable growth in seed industry assumed to be prerequisite and seed would continue to be a vital component for decades to come [2]. The organized seed industry of the country has been just forty years old. Yet, its growth has been phenomenal. India is one of the few countries where the seed sector is already reasonably advanced. The private seed industry is no more confined to just production and marketing of seed. It has as well acquired technological strength to cater to the varietal needs of tomorrow [3].

Materials and Methods

Sampling procedure

Convenient sampling technique was adopted for this study. Accordingly, Hassan district of Karnataka was purposively selected for the study. Four leading companies were selected purposively for cabbage seeds distribution based on the highest sales volume. Then, four distributors (purposively), 15 dealers and 15 nurseries were selected randomly for each crop.

Nature and sources of data

Primary data pertaining to sales volumes, push-pull index, dealer's depth, dealers width, distributors width and distributors depth were collected from the vegetable seeds distributors. The data related to vegetable seed companies, product display, problem solving, transportation facility, work force, payment habits, time period of dealing, promptness in delivery, appropriating schemes, account settlement, cordial nature, product quality, push and pull volume of sales and constraints related to vegetable seed business were collected with the help of pretested structured schedules from the dealers and nurseries for the period of 2015-16. Adequate care was taken at the time of data collection to elicit accurate information from the respondents.

Analytical tools and techniques employed

Hirschman – Herfindahal Index

The competition among the different firms considered for the study was studied using the Herschman-Herfindahl Index **[HHI].** The HHI measures the size

of firms in relation to the industry. The higher value of HHI indicates a decrease in competition and an increase of market power, while lower index indicate the lower concentration and perfect competition. The HHI index also helps to measure the market concentration.

Computation:

The HHI is calculated from the following formula:

$$H = \sum_{i=1}^{N} s_i^2$$

Where s_i is the market share of firm *i* in the market and *N* is the number of firms. The Hirschman–Herfindahl Index (*H*) ranges from zero to one, where *N* is the number of firms in the market. Equivalently, if per cent is used as whole numbers, *viz*., 75 instead of 0.75, the index can range up to 100^2, or 10,000.

Interpretation of values:

i. HHI index below 0.01 (or 100) indicates a highly competitive index.
ii. HHI index below 0.01 (or 100) to 0.15 (or 1,500) indicates a concentrated index.
iii. HHI index between 0.15 to 0.25 (or 1,500 to 2,500) indicates moderate concentration.
iv. HHI index above 0.25 (above 2,500) indicates high degree of concentration.

A small index indicates a competitive industry with no dominant players. If all firms have an equal share the reciprocal of the index shows the number of firms in the industry. When firms have unequal shares, the reciprocal of the index indicates the "equivalent" number of firms in the industry.

Descriptive statistics

These are used to describe the basic features of the data gathered from various sources. The measures like averages, ratios and percentages were used in the study to examine sales promotion measures.

The distribution network of vegetable seed companies and benchmarking the existing distribution network, a convenient sampling method was used to identify the respondents including distributors, dealers, nurserymen and company representatives. Benchmarking of the distribution network of different seed companies was done on the basis of sixteen parameters. These parameters were; number of product display, problem solving, transportation facility, work force, payment habits, time period of dealing, promptness in delivery, appropriating schemes, account settlement, co-ordinal nature, product quality, push pull index, dealers width, dealers depth, distributors width and distributors depth. Weighted mean was calculated for parameters of the distribution system and was used to know the overall performance of each company with the help of a grid. The weights were assigned to different parameters after proper classification according to their importance and deep discussion with company personnel and dealers. Points awarded to each parameter were multiplied with the respective weightage and the sum was calculated for individual companies. The company with the highest total is termed as the benchmark and was considered to have the best distribution system.

$$\text{Dealers width} = \frac{\text{Number of dealers of a particular company}}{\text{Total number of dealers}}$$

$$\text{Dealers depth} = \frac{\text{Company's sales volume through dealers (in kg)}}{\text{Total sales volume of all dealers (in kg)}}$$

$$\text{Distribution depth} = \frac{\text{Companies sales volume through distributors (in kg)}}{\text{Total sales volume of all distributors (in kg)}}$$

$$\text{Distribution width} = \frac{\text{Number of distributors of a particular company}}{\text{Total number of distributors}}$$

$$\text{Push-pull index} = \frac{\text{Average push volume (in kg)}}{\text{Average pull volume (in kg)}}$$

Results and Discussion

The survey was conducted to know the number of seed companies operating and level of market concentration in the study area. In addition, it was also to know the promotion activities and market performance of vegetable seeds companies in the district. A pre-tested schedule was used to inquire different company employees and distributors about sales volume of vegetable cabbage seeds. Based on that market share of different vegetable seeds companies in the districts were obtained and calculated using Harfindal-Hirschman Index (HHI). The promotional activities conducted by companies and market performance were also calculated.

Market structure of cabbage seed business in Hassan district

Economists evaluate the degree of "concentration" in analyzing market structure and assessing its impact on market conduct and performance. Market concentration is the major factor considered to know the structure of the market, which is a function of the number of firms and their respective shares in the total market sales.

The results presented in [Table-1] shown that Syngenta company found to have a major market share of the cabbage seed market (40.85 %) followed by Seminis seeds and Mahyco seeds in the district. Herfindal Index of 2,899.72 indicated a very high degree of concentration in the cabbage seed market. Syngenta hybrid "Quisto" is high yielding with uniform head size and more market acceptance because of small head of the cabbage and was more suitable for nuclear family. Hybrid seeds of Seminis seeds company have uniform head size but a little bigger, hence not much suitable for the nuclear family and the demand is little lesser than hybrid "Quisto".

Table-1 *Market share of cabbage vegetable seed companies in Hassan district*

Sl. No	Seed companies	Market (% share)	HHI	Market Concentration
1	Syngenta (Quisto)	40.85	2,899.72	High degree of concentration
2	Seminis seeds (Saint)	22.89		
3	Mahyco seeds (118)	26.40		
4	Nunhems seeds (Harirani)	5.28		
5	Other 5 companies	4.58		

Product promotion measures of cabbage vegetable seed companies in Hassan district

Results presented in [Table-2] reveals that among the product promoting measures followed by the companies, Syngenta accounted for 36.36 per cent of farmers meetings held in the district with respect to cabbage seed promotion. This is most important promotional measures to reach the farmers. As against this Seminis seeds considered distribution of calendars as the most important approach to create more awareness about the product among the dealers. However, Mahyco seeds did not paid attention towards the conduct of field demonstration and dealers meeting. This suggested that the company did not consider these strategies are capable of creating more awareness among farmers and dealers in the district during the study period.

Overall performance of cabbage vegetable seed companies in Hassan district

It is evident from the [Table-3] that with respect to important parameters like problem solving, workforce, transportation facility, time period of dealing, cordial nature, promptness in delivery, account settlement, product quality, dealers width, dealers depth and distribution depth, the Syngenta company was upmost. The reason attributable this fact is that the company employed largely the agricultural graduates in the district, who assumed to be possessed the good marketing

relationship with the dealers, nurserymen and vendors and had well-structured plan for promoting company hybrid "Quisto" to be the sole hybrid in the district and eliminate other competitor's hybrid in the district. "Quisto" hybrid already has more acceptances at the farmer level as well. Even though Syngenta seeds co. had not provided any special schemes for cabbage seeds promotion, still the acceptance of this company hybrid in the market is prime. Thus, it suggests that product quality is more important than the schemes provided by the companies in performance of the company. The overall performance of Syngenta seeds was topmost, followed by Seminis seeds, Mahyco seeds and Nunhems seeds valuated on the basis of grid.

Table-2 *Product promotion measures adopted by vegetable seed companies in Hassan district for cabbage seeds*

Sl. No	Promotional Measures	Seed Companies				Total
		Syngenta	Seminis	Mahyco	Nunhems	
1	Field days	30 (39.47)	25 (32.89)	6 (7.89)	15 (19.74)	76 (100.00)
2	Posters	6,000 (37.50)	5,000 (31.25)	2,500 (15.63)	2,500 (15.63)	16,000 (100.00)
3	Field demonstration	30 (66.67)	10 (22.22)	0 (0.00)	5 (11.11)	45 (100.00)
4	Farmer meeting	100 (36.36)	80 (29.09)	40 (14.54)	55 (20.00)	275 (100.00)
5	Dealers meeting	1 (33.33)	1 (33.33)	0 (0.00)	1 (33.33)	3 (100.00)
6	Banners	300 (44.78)	280 (41.79)	30 (4.48)	60 (8.96)	670 (100.00)
7	Calendar	0 (0.00)	40 (53.33)	10 (13.33)	25 (33.33)	75 (100.00)
8	Jeep campaign	5 (39.47)	10 (32.89)	5 (7.89)	7 (19.74)	27 (100.00)

Note: figures in parenthesis shows percentages to the respective total

Table-3 *Overall performance scores of cabbage seed companies in Hassan district*

Sl. No.	Parameters	Weightage	Seed Companies			
			Syngenta	Semins	Mahyco	Numhems
1	Product display	5	4	4	2	2
2	Problem solving	5	5	3	3	3
3	Transportation facility	5	5	4	2	2
4	Work force	5	5	4	3	3
5	Payment habits	5	4	2	3	3
6	Time period of dealing	5	5	3	3	3
7	Promptness in delivery	5	5	4	3	3
8	Appropriating schemes	5	3	3	4	4
9	Account settlement	5	5	2	3	3
10	Coordinal nature	5	4	2	2	2
11	Product quality	7	5	3	3	3
12	Push-pull index	7	4	2	2	2
13	Dealers width	7	5	4	4	4
14	Dealers depth	7	3	2	2	2
15	Distribution width	7	2	3	3	2
16	Distribution depth	15	3	2	2	1
Total		**100**	403	283	268	246
Rank			I	II	III	IV

Conclusion

In the case of cabbage seed marketing in Hassan district, Syngenta company was found to have the major market share (40.85 %), followed by Seminis seeds company and Mahyco seeds company in the district. The value of HHI of 2,899.72 indicated the high degree of concentration in the cabbage seed market. Syngenta hybrid "Quisto" had more market acceptance because of small and more suitable head size of the cabbage more suitable for nuclear family. In addition, high yield with uniform head size is another strong reason for its popularity. For cabbage seed promotion in the district, Syngenta conducted the highest [36.36%] per cent of farmers meetings, which is considered as the most important promotional measure to reach the farmers in the district. The problem solving, workforce, transportation facility, time period of dealing, cordial nature, promptness in delivery, account settlement, product quality, dealer's width, dealers depth and distribution depth of the Syngenta company was upmost. The company had employed largely the agricultural graduates in the district which helped to create good relationship with the dealers, nurserymen and vendors in the market. The overall performance of Syngenta seeds was topmost, followed by Seminies seeds, Mahyco seeds and Nunhems seeds.

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Abbreviations:

HHI: Herschman-HerfindalIndex

Kg :Kilograms

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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