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## **Study the Market Competitiveness and Its Performance in Green Chilli Seeds Market**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author SR, this research article is prepared from the Ph.D. thesis work at UAS Dharwad. Author ADN, major advisor of the research work and assisted in research objectives and methodology. Authors BKN, NMK and SGA were assisted in research work. All authors read and approved the final manuscript.*

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### **ABSTRACT**

The green chilli seeds market is majorly controlled by private companies in India. As a result, private companies are trying to make a profit with good quality seeds along with taking the good promotion activities in the market. The study was taken in Hassan district of Karnataka, India. In this study to know the market structure, the Herfindal Index was used and it found that East-West Company had a market share of 55.12 per cent followed by Seminis seeds with 22.44 per cent. Herfindal Index was 3,762.75 which depicted a moderate degree of concentration in the green chilli seed market in the study area. To know the performance of each selected company in the green chilli market was calculated with help of a grid. The East-West and Beejo Sheetal companies performance was equal in the market. The display of product, appropriating schemes and distribution depth of East-West seeds company was foremost because the East-West company seeds come in metal box package which makes them appear more attractive, quality protected and prove to less damage during transit.

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## 1. INTRODUCTION

Structure-Conduct-Performance paradigms are the best methods to understand how the market works. Market structure (MS) refers to the size and design of the market. It also includes how the operation takes place in the market and which influences the trader's behavior. Some of the components of market structure are; Concentration of market power, Degree of product differentiation, Conditions for entry of firms in the market, Flow of market information, and Degree of integration [1].

The term Market Conduct (MC) refers to the patterns of a firm's behaviour based on the market structure, pricing, and practices for their adapting and adjusting to the market in which they function. Market conduct includes; Promoting strategies following the market structure, Pricing, and Policy setting so that the firms can do their best in the existing market.

The term Market Performance (MP) refers to the financial results that run from the industry as each firm pursues its industrial line of conduct [2,3]. Some of the components of market performance are; profit from the market, the firm relationship with the dealers, distributors, and consumers, number of goods sold, dealers width, dealers depth, distribution depth, distribution width, and push-pull index, etc [3,4].

The SCP paradigm posits specific causal relationships between market structure, conduct and performance. In particular, market structure determines conduct and conduct in turn determines performance: structure-conduct-performance in Bin JM, Emmanuel SM, Theodore BN [5].

The green chilli is having more cultivation areas in the Hassan district of Karnataka and many private firms are actively involved in seed business through dealers and nurserymen. Whereas dealers selling the direct seeds and nurserymen by raising the seedlings. These research papers tried to know the market structure, conduct, and performance of the green chilli seed market in the study area and tried to explain how better firms can conduct and do their performance in the study area (market).

## 2. MATERIALS AND METHODS

### 2.1 Sampling Procedure

Primary data and to collect the primary data convenient sampling technique was used. The crop was selected based on one among the highest area under vegetable crop. To know the market structure 4 distributors were selected which were having the higher market share in the green chilli market in Hassan district. To know the market conduct and performance 15 dealers and 15 nurseries were selected randomly for 2015-16. Using the pretested structured schedules the data were collected. Adequate care was taken at the time of data collection to collect the correct information from the respondents.

### 2.2 Analytical Tools: Herfindahl-Hirschman Index

To know the market concentration/ market structure Herfindahl index or HHI was used. The greater the index the greater the concentration in the market. Greater the concentration than less competition and it's difficult for firms to enter that market. If the index is smaller then it indicates more competition in the industry. Which makes it easy for the firms to enter and exit the market. The major benefit of the HHI index is to measure the concentration ratio

Computation The HHI is calculated from the following formula:

$$HHI = \sum_{i=1}^n (MS_i)^2$$

Where,

HHI is the Herfindahl index,  $MS_i$  is the market share of the firm  $i$  in the market and  $N$  is the number of firms. The Herfindahl-Hirschman Index (H) ranges from zero to one, where "n" is the number of firms in the market. Consistently, if percent is used as whole numbers, viz., 75 instead of 0.75, the index can range up to 1002, or 10,000.

Interpretation of values HHI index is as follows 1. If the index is below then it indicates the higher the concentration. 2. If the index is below 1500 then it indicates the concentrated market.

3. If the index is between 1500 to 2500 then it shows moderate concentration.
4. If the index is above 2500 then it's a highly concentrated market.

A small index indicates a competitive industry with no leading 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 [6].

To know the market conduct, majorly 8 parameters were selected. Those parameters are; field days, posters, field demonstrations, farmer meetings, dealer's meetings, banners distribution, calendar distribution, and jeep campaign. Average and percentage were the analytical tools used for better and easy understanding.

Similarly to identify the market performance 16 parameters were taken into consideration and those are a number of display of product, problem handling, transportation facility, work strength, payment habit, period of dealing, promptness in delivery, appropriating schemes, Settlement of account, co-ordinal nature, Quality of product, push-pull index, dealers width, dealers depth, distributors width, and distributors depth.

With the help of the grid, the parameters were weighted based on their significance and also deep conversation with company staff, dealers, and distributors. Each parameter was multiplied with the individual weightage and the sum of those weightages was calculated for individual companies. The company with the top scorer is termed as the benchmark and was measured as the most excellent distribution system [7]

Dealers Width: 
$$\frac{\text{Number of dealers of a particular company}}{\text{Total number of distributors}}$$

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

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

Distribution Width: 
$$\frac{\text{Number of distributors of a particular company}}{\text{Total number of distributors}}$$

Push – pull Index: 
$$\frac{\text{Average push volume}}{\text{Average pull volume}}$$

### 3. RESULTS AND DISCUSSION

The survey was conducted to know the number of seed companies operating and the 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 the sales volume of vegetable cabbage seeds. Based on that market share of different vegetable seeds companies in the districts was obtained and calculated using Harfindal-Hirschman Index (HHI). The promotional activities conducted by companies and market performance were also calculated.

#### 3.1 Market Structure of Green Chilli Seeds

It was observed that East-West company had a market share of 55.12 percent followed by Seminis seeds with 22.44 percent (Table 1). Herfindal Index was 3,762.75 which depicted a moderate degree of concentration in the green chilli seed market in Hassan district. The two hybrids, viz; East-West seeds company hybrid "Ulka and Seminis hybrid "Sitara" had the majority of market share because of the higher pungency in pods and uniform size of the pods. In addition, these two hybrids are used both as green chilli and dry chilli if harvest is delayed. A similar result was found by Stephan Raj et. al. [6], who used the HHI index in Belagavi district green chilli seed market and Tanindo seeds company had the major share in the market because of its high yielding hybrid "Siri".

**Table 1. Market share of vegetable seed companies in hassan district**

SL. No	Crop	Seed companies	Market (% share)	HHI	Market Concentration
3	Green chilli	East-West (Ulka) Seminis seeds (Sitar) Beejo Sheetal (Priyanka) Kalash seeds (Disha) Other 3 companies	55.12 22.44 11.22 9.62 1.60	3,762.75	High degree of concentration

HHI: Herfindhal-Hirschman Index

**Table 2. Product promotion measures of vegetable seed companies in hassan district for green chilli seeds**

Sl. No	Promotional Measures	Companies East-West	Seminis seeds	Beejo sheetal	Kalash seeds	Total
1	Field days	20 (62.50)	5 (15.63)	5 (15.63)	2 (6.25)	32 (100.00)
2	Posters	5,000 (22.73)	7,000 (31.82)	5,000 (22.73)	5,000 (22.73)	22,000 (100.00)
3	Field demonstration	10 (14.29)	40 (57.14)	10 (14.29)	10 (14.29)	70 (100.00)
4	Farmer meeting	75 (34.88)	50 (23.26)	60 (27.91)	30 (13.95)	215 (100.00)
5	Dealers meeting	1 (33.33)	1 (33.33)	1 (33.33)	0 (0.00)	3 (100.00)
6	Banners	250 (28.41)	280 (31.82)	200 (22.73)	150 (17.05)	880 (100.00)
7	Calendar	100 (22.73)	40 (9.09)	100 (22.73)	200 (45.45)	440 (100.00)
8	Jeep campaign	10 (18.18)	20 (36.36)	10 (18.18)	15 (27.27)	55 (100.00)

Note: figures in parenthesis shows percentages to total

**Table 3. Overall performance scores of green chilli seed companies**

Sl. No.	Parameters	Weightage	Companies			
			East-West	Seminis seeds	Beejo Sheetal	Kalash seeds
1	Display of product	5	4	3	3	2
2	Problem handling	5	2	2	4	2
3	Transportation facility	5	3	4	3	3
4	Work strength	5	2	3	3	2
5	Payment practice	5	3	2	3	3
6	Time taken for dealing	5	3	3	3	4
7	Promptness in delivery	5	3	4	3	4
8	Schemes to approaching	5	4	2	4	2
9	Settlement of account	5	3	2	3	4
10	Coordinal nature	5	2	2	3	3
11	Quality of Product	7	5	4	4	4
12	Push-pull index	7	2	1	3	2
13	Dealers width	7	4	4	2	2
14	Dealers depth	7	3	3	3	3
15	Distribution width	7	2	2	3	3
16	Distribution depth	15	3	2	2	2
Total		100	302	263	302	280
Rank			I	III	I	II

### 3.2 Product Promotion Measures of Vegetable Seeds (Market Conduct)

The chilli market in the Hassan district was dominated by East-West seeds company which considered conducting field days (62.50%) as the most important promotional measure to reach farmers. In the case of Seminis seeds, taking up the field demonstration (57.14%) was perceived as the most effective measure to make awareness among farmers and dealers. All the

companies were aggressively involved in the promotional measures in the district during the study period (Table 2) the similar results were found by (2020) in Belagavi seeds market.

### 3.3 Overall Performance of Different Vegetable Seeds

According to results in Table 3, display of product, appropriating schemes, and distribution depth of East-West Seeds Company were

foremost because the East-West company seeds come in metal box package which makes them appear more attractive, quality protected and prone to less damage during transit. The company also provided schemes like foreign trips for the dealers who sold the chilli seeds more than 10 kgs in a particular season. The similarity could be observed with Beejo Sheetal company as well. In the case of distribution width, Quality of product and cordial nature, the Beejo Sheetal seeds were upmost. Its hybrid, "Sitara", has high pungency with uniform pod size which made the highest sale in the district and acceptance among the farmers and in the market. Beejo Sheetal is a well-developed company only in chilli seeds in the different districts of Karnataka state. The company focused not only on the quality of the product as well as focused on appropriate schemes too. The overall performance of Beejo Sheetal company was prime along with East-West seeds company, followed by Kalash seeds and Seminis seeds. This suggests that companies should provide best-selling schemes to the dealers and nurserymen to perform well in the seed business. Similar results were found on the cabbage seed market and the result has shown that Syngenta company is a leader in the market Raj Stephan, et al., [7].

#### 4. CONCLUSION

In the green chilli seeds market of Hassan district, East-West company had a market share of 55.12 per cent followed by Seminis seeds (22.44%). HHI was 3,762.76 which depicted a moderate degree of concentration. Concerning promotion it was dominated by East-West seeds company which considered conducting field days (62.50%) was the most important promotional measure to reach farmers. For Seminis seeds, field demonstration (57.14%) was perceived as the most effective measure to make awareness among farmers and dealers. All the companies were aggressively involved in the promotional measures in the district. Wherein concerning product performance: the display of product, appropriating schemes and distribution depth of East-West seeds company were foremost due to seeds come in metal box package which makes them appear more attractive, quality protected and prone to less damage during transit. The overall performance of Beejo Sheetal company was prime along with East-West seeds company, followed by Kalash seeds and Seminis. This study helps seed companies to focus more on the pungency and pod length of the green

chillies. These high pungent chillies are more accepted in the market and farmers get a better price for such chillies.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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