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Constraints Analysis of Shrimp Farming in the Coastal Belt of South Gujarat

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Abstract: ***The study examined the constraints analysis of shrimp farming in the coastal belt of South Gujarat. From the South Gujarat region, mainly four districts, namely, Valsad, Navsari, Surat, and Bharuch districts, were selected purposively to study the socio-economic characteristics of shrimp farmers. From each district, two talukas were selected purposively according to the availability of shrimp farmers. After that, two villages from each taluka and from each village, fifteen farmers were selected by simple random sampling (SRS) method. Thus, a total of 240 shrimp farmers were selected for this study. The present study was the vital work in this area which revealed that the disease problem was ranked as the most crucial constraint followed by poor quality of seeds. Feed cost was a third major constraint as reported by shrimp farmers in the study area. The other important constraints identified in the study area were lack of credit, lack of co-operation among shrimp producer's, lack of technical guidance, involvement of middleman, lack of quality control agencies, lack of government support and losses due to theft that resulted in low productivity etc.***

Keywords: Litopenaeus Vannamei, Constraints, South Gujarat

I. INTRODUCTION

Aquaculture is the rapidly growing food production sector in the world. In which shrimp dominated aquaculture production. In India, shrimp farming has recorded substantial progress since the 1990s. *Litopenaeus vannamei* was introduced in 2009, and now it has been the aspirant species of Indian shrimp farming [4]. In Gujarat, shrimp farming is a fast-growing industry. Approximately one lakh ha area is currently used for brackish water shrimp production (Dept. of fisheries, 2020). There are thousands of species adapted to a wide range of habitats. They can be found feeding near the seafloor on most coasts and estuaries, as well as in rivers and lakes. To escape predators, some species flip off the seafloor and dive into the sediment. Shrimp are often solitary, though they can form large schools during the spawning season. They play essential roles in the food chain and are an important food source for larger animals ranging from fish to whales. The muscular tails of many shrimp are edible to humans, and they are widely caught and farmed for human consumption. Commercial shrimp species support an industry worth 50 billion dollars a year. There were only two species that were commercially cultured were white leg shrimp (*Litopenaeus Vannamei*) and Giant tiger prawn (*Penaeus Monodon*). White leg shrimp also known as Pacific white shrimp or king prawn, is a variety of prawn of the eastern Pacific Ocean commonly caught or farmed for food. Due to the outbreak of WSSV and other associated problems in Penaeus monodon farming, an alternate exotic species *Litopenaeus vannamei* (Pacific white legged shrimp) was introduced in 2009. To recover an issue of food requirement, improved shrimp farming practices is adopted by the shrimp farming community. But to adopt this farming shrimp farmers facing so many constraints. So, the present study was intended to find various constraints of shrimp aquaculture in the South Gujarat region of Gujarat state.

II. METHODOLOGY

From the South Gujarat region, mainly four districts, namely, Valsad, Navsari, Surat, and Bharuch districts, were selected purposively to study the socio-economic characteristics of shrimp farmers. From each district, two talukas were selected purposively according to the availability of shrimp farmers. After that, two villages from each taluka and from each village fifteen farmers were selected by simple random sampling (SRS) method. Thus, a total of 240 shrimp farmers were selected for this study. The interview schedule intends to gather information regarding social, personal, technical, economic, environmental and social constraints. Descriptive statistical tools were employed wherever required. After the opinion of the respondents regarding the problems of shrimp production was collected, Garrett's Ranking Technique was used to measure constraints of the farmer:

$$\text{Percent position} = \frac{100\,(R_{ij} - 0.50)}{N_{ij}}$$

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Where,

R_{ij} is the rank given by ith item by jth individual

N_j is the number of items ranked by the jth individual

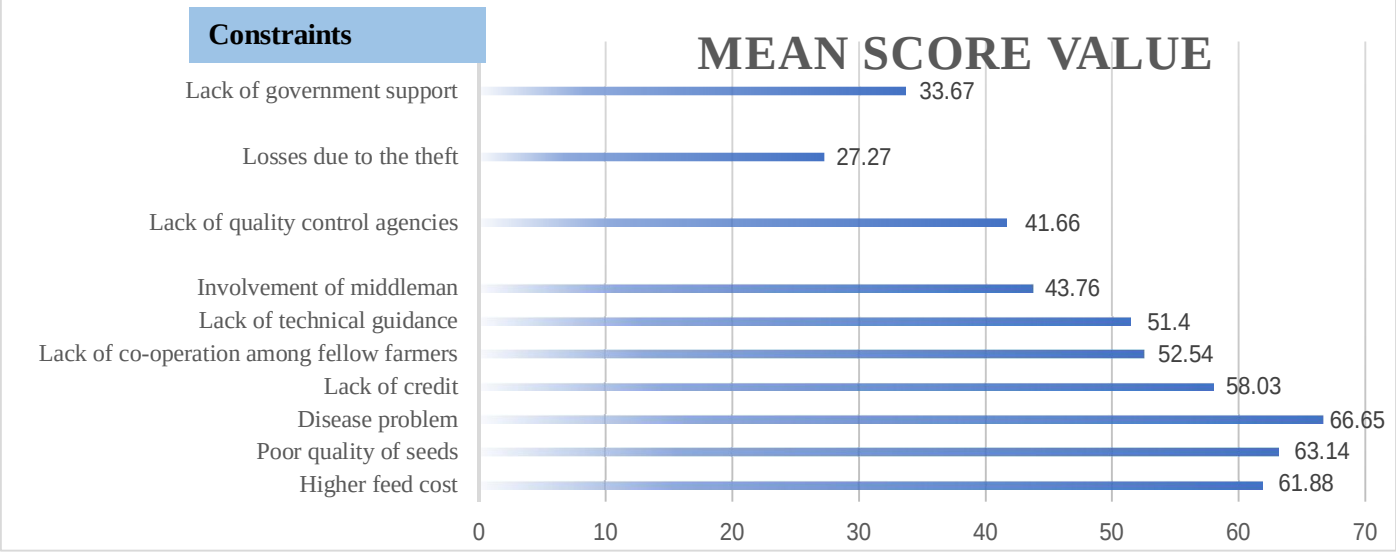
III. RESULTS AND DISCUSSION

Garrett's ranking technique was used to rank the constraints identified in shrimp production. By using Garrett's formula, the per cent position was obtained. These were converted into scores by relating to Garrett's table. The mean score values were obtained, and the constraint having the highest score value was identified as the most important. The analysis was done according to the producer's opinion.

Table-1: Constraints of shrimp farmers in South Gujarat

Sr. No.	Constraints	Mean score value	Garrett Ranking
1	Higher feed cost	61.88	3
2.	Poor quality of seeds	63.14	2
3.	Disease problem	66.65	1
4.	Lack of credit	58.03	4
5.	Lack of co-operation among shrimp producer's	52.54	5
6.	Lack of technical guidance	51.40	6
7.	Involvement of middleman	43.76	7
8.	Lack of quality control agencies	41.66	8
9.	Losses due to the theft	27.27	10
10.	Lack of government support	33.67	9

Figure-1: Constraints of shrimp farmers in South Gujarat



The constraints analysis of producer's in the study area was represented in Table-1. The disease problem was ranked as the most important constraint (mean score value of 66.65) followed by the poor quality of seeds (mean score value of 63.14). Chittem and Kunda (2017) reported that to avoid crop failure, serious attention is required to prevent disease outbreaks. 40% of the farmers experiencing other than WSSV diseases (33.33%) such as Vibrio sp., white gut, white fecal matter, loose shell etc. Tank *et al.* (2019) reported that 24.65% of farmers faced disease outbreak problems. The diseases prevalence other than viral might be high stocking densities and poor water quality management.

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Feed cost was a third major constraint as reported by shrimp farmers in the study area (mean score value of 61.88). Chittem and Kunda (2017) stated that 91.66% of respondents reported high cost of feed and seed. The constraint analysis of seed showed that majority (65%) of the respondents facing the constraints of high cost of seed followed by inadequate supply of required number of hatchery seed (60%) within stipulated time. The other important constraints identified in the study area were lack of credit (mean score value of 58.03). The shrimp growers should be provided with adequate credit at the time of need to overcome the financial problems in the management of shrimp farming practices. Usman *et al*. (2016) reported about 85% of the respondents also revealed that lack of credit was their major constraint to adopting farming technologies. Other constraints were lack of co-operation among shrimp producer's (mean score value of 52.54), lack of technical guidance (mean score value of 51.40), involvement of middlemen (mean score value of 43.76), Lack of quality control agencies (mean score value of 41.66), lack of government support (mean score value of 33.67) and losses due to theft that resulted in low productivity (mean score value of 27.27) etc. It was revealed that lack of experience (86.51%) was the most crucial problem faced by a majority of the respondents, followed by lack of co-operation among different institutes (57.67). Lack of information technology affects 37.21% farmers. A similar result was found by Sahu *et al*. (2014).

IV. CONCLUSION

It was concluded from this study that, disease problem was ranked as the most important constraint (mean score value of 66.65) followed by the poor quality of seeds (mean score value of 63.14). Feed cost was a third major constraint as reported by shrimp farmers in the study area (mean score value of 61.88). The other important constraints identified in the study area were lack of credit (mean score value of 58.03), lack of co-operation among shrimp producer's (mean score value of 52.54), Lack of technical guidance (mean score value of 51.40), involvement of middleman (mean score value of 43.76), lack of quality control agencies (mean score value of 41.66), lack of government support (mean score value of 33.67) and losses due to theft that resulted in low productivity (mean score value of 27.27) etc.

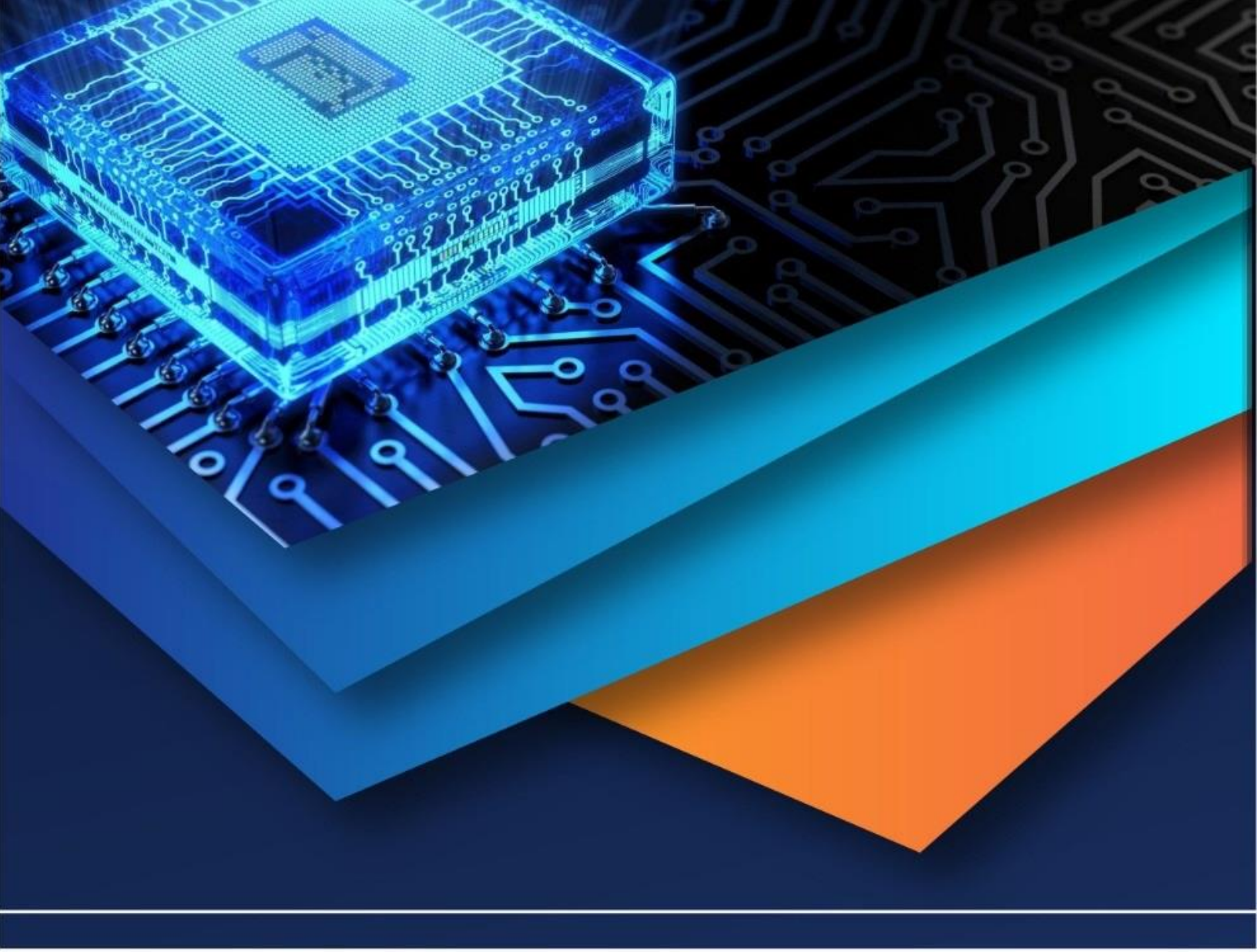
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