CHAPTER - II

REVIEW OF LITERATURE

Literature review aims to portray the critical points of current and collected knowledge on the topic under study. It seeks to describe, summarize, evaluate, clarify and integrate the content of primary reports. Moreover, it forms the basis for the justification for future research in the area. As such, review of the literature has become an inevitable part of any scientific investigation. Hence a brief review of available literature, related to the study is presented under following heads.

2.1 To forecast the area and production of cotton

2.2 To study the farmer's expectation about a new variety of Bt cotton

2.3 To identify the factors affecting the purchase of Bt cotton seeds

2.4 To study the satisfaction level of farmers regarding 3028 variety

2.5 To assess the constraints faced by dealers and farmers regarding 3028 variety

2.1 Forecasting of area and production of the crop

Awal and Siddique (2011) studied the rice production of Bangladesh employing by ARIMA model. The main objective of the study was to develop appropriate ARIMA model for the five years forecast for all the time series of Aus, Aman, and Boro rice production in Bangladesh. The study was concluded mainly on the secondary data to the period of 1972-73 to 2007-08. To forecast the rice production Box- Jenkins model was used. and it concluded that 1735, 11056, and 13538 thousand metric tons in 2008-09 and if the trend in present production to be continued, the total rice (Aus, Aman, Boro ) production of Bangladesh would be 1591, 11612, and 15541 thousand metric tons in the year 2012-13. To increase rice production of Bangladesh, the government should put emphasis on adopting of high yielding rice varieties in three rice seasons and take proper input subsidiary programmed in order to achieve food security.
Purna (2012) studied the application of ARIMA Model for forecasting agricultural productivity in India. The main objective of the study was to forecast annual productivity of selected agricultural product. 34 different agricultural products have been selected. Annual data from 1950 and 1957 onwards to 2010 as the case may be have been used. All the necessary steps of ARIMA model have been applied systematically for forecasting 5 Periods ahead from 2011 onwards. Among these items, tea provides lowest MAPE value, whereas cardamom provides lowest AIC value. Similarly, highest MAPE is obtained for papaya and highest AIC value is for sugarcane.

Biswas et al. (2014) studied the forecasting wheat production using ARIMA model in Punjab. The main objective of the study was to forecast the production potential of wheat up to 2020-21. The Box- Jenkins ARIMA method was used. The past 60 years data revealed that wheat yield was increased from 0.8 t ha-1 in 1950-51 to 4.3 t ha-1 in 2009-10. The model projected 15.3 per cent increase in wheat production in the years to come by 2020-21 in Punjab. Based on ARIMA output, wheat production of Punjab is likely to increase from 15844.7 thousand tons in 2010-11 to 18271.7 thousand tons in 2020-21.

Prabakaran and Sivapragasam (2014) studied the forecasting areas and production of rice in India using ARIMA model. The main objective of the study was to develop appropriate ARIMA model for the time series of rice area and production in India and to make five-year forecast with an appropriate interval for the period 1950-51 to 2011-12. The Box- Jenkins ARIMA method was used. The result showed area forecast for the year 2015 to be about 44.75 thousand hectares with upper and lower limits 47.53 and 41.97 thousand hectares respectively, and production forecast for the year 2015 to be about 104.37 thousand tonnes with upper and lower limits 115.56 and 93.48 thousand tons respectively.

Tripathi et al. (2014) studied the forecasting rice productivity and production of Odisha, India, using ARIMA model. The main objective of the study was to forecast area, production, and productivity of rice in Odisha. It was made from the historical data of 1950-51 to 2008-09 by using univariate autoregressive integrated moving average (ARIMA) models. The trend analysis of the rice data showed an increased productivity and production trend for both Odisha and India; the rate of increase was less in Odisha than all Indian average. This may be attributed to under exploitation of the potential of the state due to low
input in agricultural operations and other biotic and abiotic factors. To bridge the gap between existing and potential productivity, rice varieties suitable to different ecologies can be introduced in farmer’s field along with the nutrient and agronomic management practices.

Sahu et al. (2015) Studied the forecasting of the area, production, yield and total seeds of rice and wheat in SAARC countries and the world towards food security. The main objective of the study was to forecast the area, production, yield and total seeds of rice and wheat in SAARC countries. The Box-Jenkins ARIMA modeling technique was used. The forecast shows that rice and wheat production for the year 2020 would be about 794 and 777 million tons respectively in the world. The study revealed that the yield of rice and wheat in the world would be 4.35 t/ha and 3.4 t/ha in 2020 but the yield of these two crops in SAARC will remain far below the world projection. Thus it revealed that good quality of seeds in good amount be made available to the farmers, otherwise the whole food security of this part of the globe would be at tremendous risk.

Choudhury et al. (2017) studied the modeling and forecasting of total area, irrigated area, production and productivity of important cereal crops in India towards Food Security. The main objective of the study was to forecast the total area, irrigated area, production and productivity of rice, maize and wheat. For the modeling and forecasting purpose Box–Jenkins ARIMA modeling technique was used to analyze the information from 1951 through 2015. The result of the study reveals that the yield of rice, wheat and maize in India would be 2.57 tons/ha, 3.14 tons/ha and 3.13 tons/ha in 2021 respectively. The total production of rice, wheat and maize will be increased by 5319 thousand tons, 5.5 thousand tons and 3838 thousand tons in total respectively. It also emphasizes the need for an increase in the per hectare yield of these crops in India in order to get a sustainable development of Agriculture. Forecasting of the area, irrigated area, production and productivity will be helpful to solve the food security problem and for development of policy research for the major food crops.

Pushpa Savadatti (2017) Studied the forecasting of area, production, and the productivity of food grains. The main objective of the study was to forecast the area, production, and the productivity of food grains for 5 years starting from 2016-2017 onwards. The univariate time series analysis ARIMA models was used. The forecast value indicated that production and productivity will increases during the forecast period but that of the area near stagnancy,
calling for timely measures to enhance the supply of food grains to meet the increasing demand in the years. These forecasts would be a great help to policy makers in their planning and future policy decision.

2.2 The farmer’s expectation

Adenle et al. (2014) revealed that most farmers have a very poor understanding of GM technology which they often misunderstood as traditional plant breeding biotechnology. While most respondents focused on the potential benefits of GM technology including high-yielding varieties, better nutritional value and shorter growing cycle crop traits, only a few respondents were concerned about the potential health and environmental risks of GM technology. Root and tuber crops such as cassava, yam and sweet potato were mostly discussed for health improvement and food security through GM technology. This study emphasizes the need to recognize challenges such as lack of awareness, inadequate training, low level of education and poor extension services among others in introducing new technology including GM technology to resource-poor farmers in African countries like Ghana and Nigeria. It concludes that failure to address these challenges will impede the adoption of GM technology.

Gaurav et al. (2014) studied the influence of customer expectation in innovative product design and development – case study. The main objective of the study to demonstrate the student’s expectation in evaluating the new ballpoint pen product analysis based on a group of student surveyed. It was revealed that customer learning and product commercialization are a most important influencing parameter in the new product development process. Therefore new pen market should always take into customer learning and commercialization. most of the students like low cost and high technology pen which support the hypothesis pertaining to product commercialization.

2.3 The factors affecting the purchase of seeds

Zabid et al. (1991) studied the farmer’s buying selection criteria for agricultural inputs. The main objective of the study was to find in his research that farmers perceived quality as the most important criterion in their selection of inputs, while advertising was perceived as the least important. The vegetable growers had favorable attitudes towards quality, products availability and fair prices, and less favorable attitude towards advertising
influence. The socio-demographic factors such as income, farm size, geographical distribution, educational level, and ethnic group, were also found to have some influence on farmer’s selection criteria of agricultural inputs.

Soni et al. (2010) studied the factors affecting consumer purchase decision of laptops. The researcher found a number of interesting things about the top 3 selling brands in the market. HP and Dell are needed to re-look at their advertising campaigns as they seem to be ineffective. Hp has been market sales are promoted by word of mouth and it should introduce models with extra features, as the customer to buy Hp is willing to pay for these features.

Kumar (2011) studied the impact of celebrity endorsement on consumer buying behavior. The main objective of the study to examine the impact of celebrity endorsement on buying behavior. A sample size of 200 students was randomly selected from a different university. Quantitative, regression, correlation and frequency analysis method was used. It is concluded that celebrities endorsed advertisements are more attractive than the non-endorsed advertisement. Finally, the result shows that celebrity endorsement was the reasonable impact on the customer as per their attitude and buying behavior.

Lohana (2011) studied the marketing strategy adopted by Syngenta India Ltd. company and its impact on consumer buying behavior in Nanded city. The main objective of the study to study the relationship between Marketing Strategy and its impact on consumer buying behavior of Syngenta India Pvt. Ltd. in Nanded city. A sample size of 100 farmers was selected by cluster sampling. A simple analysis was used. The findings showed that the product and place has an impact on consumer motives, and the pricing strategy has a significant positive impact on consumer buying behavior. The product and place strategies influence consumer buying behavior. These findings suggest that consumers look for product characteristics and store location when buying Agrochemicals products.

Meti (2012) studied the factors influencing the drip irrigation adoption, constraints and remedial measures to increase the area under drip irrigation. The main objective of the study to find out the factors influencing the drip irrigation adoption, constraints and remedial measures to increase the area under drip irrigation. A random sampling technique was used. It was concluded that farmers were influenced by the benefits like saving in water, labour,
easy application of water, increased yield, reduced weed growth, better quality produce and to avail subsidy, respectively for drip adoption. The other drip irrigation farmers were influenced by neighbors and relatives, Private Agencies, Agricultural Assistants, Assistant Horticulture Officers, Non-Governmental Organizations, Television and Radio, respectively for drip adoption.

Kumar and Anand (2013) studied on understanding consumer purchase intention towards biodegradable footwear. The primary objective of the study was to understand the intention, affordability, and purchasing decision of consumer towards biodegradable footwear. Snowball sampling method was used. The sample size taken for the study was 120 respondents. It was found that there is a lot of consumer awareness about green products, but purchase intention of the consumers influenced them significantly with reference to the purchase of biodegradable footwear. quality and price, which influenced the consumer to make a purchase decision.

Shukla and Dhande (2013) studied the marketing of drip irrigation in Jalgaon district. The main objective of the study was to study the distribution network for identifying the market share and dealers perception regarding these companies. A sample size of 90 dealers was purposively selected. It revealed that the most of the sales take place on credit. Majority of sales (48 per cent) takes place before sowing of kharif, as banana and Cotton are major crops of this area. 50 per cent of surveyed dealers deals in national/multinational branded products 36 per cent deal in local brands and 14 per cent deals keep both the local and national brands to meet different requirements of the market. under the present investigation, it was found that most of the dealers are unsatisfied with the replacement policy of micro irrigation companies and brand price, quality and past experience are the major factors the purchase of drip irrigation.

Sivakumar and Kaliyamoorthy (2014) studied the factors influencing the purchase of agricultural tractors. The main objective of the was to study the factors influencing the purchase of agricultural tractors. Sample size taken for the study was 90 farmers. The study was carried out in Sivaganga district of Tamil Nadu state. Factor analysis was used to find out the most influencing factors considered by the respondents while making the purchase decision of tractor. It was found as per the ranking is given by the respondents that subsidy
was ranked first and followed by sources consulted, horse power, after-sales service, price and brand name respectively are considered for purchase of tractors.

2.4 The satisfaction level of farmers

Beatson et al. (2006) studied the determining consumer satisfaction and commitment to self-service technology and personal service usage. The main objective of the study was to study the consumer satisfaction through self-service technology. The study was conducted in a metropolitan area in Australia. Sample size taken for the study was 248 respondents. The study explored relative impact of self-service technology on consumer satisfaction and on a multidimensional measure of consumer commitment containing affective commitment, temporal commitment and instrumental commitment. The results revealed that in a hotel context personal service still remains very important for assessments of satisfaction, and effective and temporal commitment.

Nishi et al. (2011) studied the dairy farmer’s satisfaction with dairy cooperative societies. The main objective of the study was to assess the dairy farmer’s satisfaction with dairy cooperative societies. Sample size taken for the study was 80 farmers. The satisfaction of the farmers was measured with the help of Bhanja scale. The study concluded covering eight selected DCSs in Pradeshik Cooperative Dairy Federation (PCDF), Utter Pradesh. Majority of member farmers were modest in participating different activities of the DCSs. The average herd size among the respondents of the study area was seven dairy animals per household. The good quality of milk produced and sold by member farmers to the societies indicate the commercial viability of dairy farming in the area. About one-third of the economic motivation was found to have a strong influence on the satisfaction level of farmers however, the prevailing constraints negatively contributed towards farmer’s satisfaction with the functioning of DCSs.

Rajpurohit and Vasita (2011) studied that consumer preferences and satisfaction towards various mobile phone services. The study concluded that majority of consumers are aware of the services offered by their mobile phone operators. the study also reveals that consumers are satisfied with the services offered by their mobile phone operators. sometimes, consumers face problems of poor clarity, call drop and poor network but overall they are satisfied with the services offered to them. the consumers are satisfied with the call tariffs,
network coverage and periodical offers except those offered by BSNL and reliance. The study says that consumers are satisfied with the process of solution of their problems and queries.

Bhandari and Mishra (2012) studied the satisfaction level of farmer’s towards agricultural produce marketing committee. The main objective of the study was to evaluate the market facilities to the farmers of agricultural produce in Dhamtari districts. Sample size taken for the study was 120 farmers. It revealed that farmers sell a large portion of their agricultural produce through APMCs because farmers get fair pricing, security of crops, payment on time, guidance from the employee, security from malpractices, proper weighing system and other essential facilities they opt to sell their agricultural products through APMCs. Most of the responses of farmers about APMCs of Dhamtari district were positive. Some of them want some more and frequent training and awareness program.

Chalotra (2012) studied the small manufacturing firms’ products-mix and consumer satisfaction. The main objective of the study was to study the customer satisfaction regarding small manufacturing products. The sample size is taken for the study 368 customers. five-point Likert’s scale was used. It was revealed that customer satisfaction dependent upon product quality, product feature, product image and product services offered along with their age, qualification, and profession. to nurture the customer satisfaction small scale industries should come up with the regular advertisement, repute brand, more products features and delighted after sale service.

Menon and Baby (2012) studied the customer satisfaction of public sector telecom company (BSNL) in land line. The main objective of the study was to identify the variables influence the subscriber satisfaction. Sample size taken for the study was 200 respondents. Chi-square technique was used. They revealed that customer satisfaction is highly essential and evitable for the smooth functioning of an organization having public dealing and responsibilities. It depends on several factors like tangibility, reliability, assurance, superior service quality, empathy. This paper studied the various aspects of customer satisfaction, causes, reason and its impact in the telecom sector with suggestions. The competition among companies increased. So it is a must for the firm to improve its services to maintain its current customers and also give intensive training for the staff in-service department.
Ganpat et al. (2014) studied the farmer’s satisfaction with extension services in the organization of Eastern Caribbean states. The main objective of the study was to assess the level of satisfaction farmers have with the extension services. 467 farmers were randomly selected. Likert’s scale was used. They revealed that farmer’s overall satisfaction with the extension was moderate. Farmer’s age, gender, education level, size of farm, number of parcels farmed, number of extensions visited received, and whether farmers operated on a full time or part time basis significantly influenced farmer’s level of satisfaction. Recommendations included: the redefinition of target farmers, as well as the scope of extension programs for intervention to meet these states’ food security goals; the improvement of the technical capacities of extension officers; the expansion of group development work; and the increased use of ICTs for information dissemination and the provision of ICT hardware for extension staff.

Preethi and Anupriya (2017) studied the customer preference and satisfaction towards selected retail stores in Coimbatore city. A sample size taken for the study was 250 respondents. A simple tabular method was used. The study reveals that consumers prefer modern retail formats due to quality, a variety of products and for security purpose. Based on the study majority of the respondents are facing a problem like insufficient parking facility, no proper crowd management and slow billing. Hence, the retail stores should concentrate mainly on consumer preference and satisfaction. To be successful, Retail Stores have to blend the best expertise and technology that the world has to offer and synergize these with the demands and expectations of the consumers.

2.5 The constraints faced by dealers and farmers

Bodake et al. (2009) studied the constraints faced by the farmers in adoption of bio-fertilizers. A sample size 150 farmers were randomly selected. The study was undertaken in College Extension Block Nagpur. The study indicated a non-significant relationship with awareness and adoption levels of biofertilizers in respect of age. However, the selected variables viz. education, land holding, annual income, socio-economic status, scientific orientation, extension contact and cosmopolitans of the farmers showed a significant relationship with the awareness and adoption of bio-fertilizers by the farmers. Major constraints expressed by the respondents in the adoption of bio-fertilizer were non-
availability of agricultural literature, lack of finance due to low income, lack of bio-fertilizer supply centres in the village and absence of timely guidance from Agricultural Department.

Patil et al. (2009) studied the constraints faced by the dairy farmers in Nagpur district while adopting animal management practices. The present study was conducted in Nagpur district. The sample size for the study was taken 225 dairy farmers. Majority of respondents stated low milk production from the local breeds (72.44 per cent), 45.33 per cent as a shortage of green fodder and 41.33 per cent as lack of clean water while 25.33 per cent stated lack of preservation facility as their constraint. Referring to the financial constraints, 78.22 per cent respondents stated their constraint as delay in milk payment, 63.11 per cent as inadequate money and lack of loan facility whereas the high cost of concentrates as the constraint by 56.44 per cent of the respondents. As regards technical constraints, the majority of the respondents (68.00 per cent) have stated their constraint as inadequate knowledge of diseases, their prevention and control while 56.89 per cent have referred their constraint as non-availability of veterinary services.

Dye et al. (2012) studied the retailer and customers’ problems and perspectives. The sample size of the study was taken 100 which consist 50 customers and 50 retailers. The statistical tools such as Percentage analysis, Weighted ranking analysis, Garrett’s ranking analysis, Likert’s scale technique and Chi-square analysis was used. The study was conducted in Pollachi town, Coimbatore district. It was more than 90 per cent of retailing in India’s falls into the unorganized sector, the organized sector is largely concentrated in big cities. The retailer, who is the connecting link between the producer and consumer, faced many problems to market their products from various dimensions and many causes behind this. Price variation is the main problem faced by the retailers. Low-profit margin and poor credit facility are considered as other major problems of retailers. Bad debts are also the main problem faced by retailers from the customers. The requirement of more working capital and limited credit period from the company are identified as other major problems faced by the retailer in term of finance. The various problems faced by the retailer’s lack of experience is the first and foremost cause. Poor market condition and limited finances.

Turkhade (2012) studied the problems of cotton farmers in Vidarbha region of Maharashtra. The study was conducted in Amravati district of Maharashtra. A sample size 60
farmers were selected by simple random sampling. They revealed that the problems of the cotton farmers in Maharashtra with respect to the effect of insecticides and unpredictable climate, labour problems, black marketing by the private traders, failure of Govt. policies and the problem of electricity.

Kolekar et al. (2013) identified the constraints perceived by the contract farmers and integrating firm under contract dairy farming. The study was conducted in Satara district of Maharashtra. Sample size taken for the study was 132 respondents by random sampling method. Garrett’s ranking technique was used. They revealed that under contract dairy farming major constraints perceived by contract dairy farmers were difficulty in meeting quality requirements, followed by pressure for maintaining the quality of milk, delayed payment of milk products, faulty grading of milk, delay in arranging inputs and lack of credit for milk production. Similarly, major constraints perceived by integrating firm were frequent milk price fluctuation in the market, followed by input diversion by farmers, farmer’s negligence in maintaining quality, difficulty in maintaining communication with farmers, difficulty in arranging quality inputs and violation of terms and conditions by farmers.

Rahaman et al. (2013) studied the problems in production and marketing of fish in West Bengal. The main objective of the study was to study the major constraints related to production and marketing of fish. The study was conducted in Birbhum district of West Bengal. A sample size 120 fish farmers were selected by simple random sampling. Garrett’s ranking method was used. They revealed that non-availability of quality fish seeds, lack of government support both technically and financially, quarrel and litigations among the owners of the pond, poor adaptability of fish seed in new environment, labour crisis, high degree of perishability of the product, cutthroat competition, inconsistent supply of fish, lack of storage facility etc.

Shrinivas and Bhalekar (2013) identified the constraints faced by farmers in adoption of biofertilizers. The main objective of the study was to ascertain the constraints faced by farmers in adoption of biofertilizers. The study was conducted in Deoli taluka of Wardha district of Vidarbha region of Maharashtra state. A sample size of 100 farmers was randomly selected. Frequencies, percentage and ranking method were used. The study revealed that a great majority of the respondent (85 per cent) reported the lack of confidence towards various
biofertilizers practices. More than half of the respondents (58 per cent) reported that lack of knowledge about bio-fertilizers, followed by inadequate water availability (45 per cent) and lack of guidance from extension workers (41 per cent). Therefore, advisable that the extension agency should increase the confidence level of farmers on the use of bio fertilizers. Information regarding utilization of biofertilizers through the organizing of training programmes, guest lecture, method and result demonstration and krishi mela.

Kumar and Patel (2015) studied the constraints faced by the Bt cotton growers in Bt cotton cultivation. A sample size of 160 farmers was randomly selected. Frequencies, percentage and ranking method were used. The study was conducted in Vadodara district of Gujarat state. They revealed that major constraints faced by all the farmers were the high price of seed, the other important constraints heavy infection of sucking pest, improper vegetative growth and unsuitability for monsoon as the branches break down in rain were faced by the Bt cotton growers. The constraints which rank last was difficulty in weed control.

Raghuwanshi and Mazhar (2017) studied the constraints faced by the beneficiary in the adoption of organic farming practices of soybean crop under ATMA programme. The study was conducted in Guna district of Madhya Pradesh. The sample constituted 60 beneficiaries and 60 non-beneficiaries. Thus total numbers of respondents for the present study were 120. The study indicated a non-significant relationship with the adoption of organic farming in respect of age, family size, annual income and risk preference. Major constraints expressed by the respondent in adoption of organic farming practices of soybean crop were lack of capital, lack of bulk local demand for organic soybean, long process of organic manure preparation, lack of knowledge about bio-pesticides, application time, method and proper dose, lack of published information regarding various practices of organic soyabean farming.