CHAPTER –

CONCEPTS AND REVIEW OF RELATED STUDIES
CHAPTER - II

CONCEPTS AND REVIEW OF RELATED STUDIES

2.1. Precise definition of the concepts used in the present study and a brief review of past studies in the related topics are presented here in order to explore the relationship and to achieve clarity and comprehension of the methodological problems of this study.

2.2. Concepts

2.2.1. Fertilizer

Fertilizer is generally defined as "any material, organic or inorganic, or natural supplies of, one or more of the chemical elements required for the plant growth.

2.2.2. Chemical Fertilizer

Solid, liquid or gaseous material containing one or more nutrients in inorganic form or rarely in the form of synthetic organic compounds, such as: urea, or cyanamide.
2.2.3. Straight Fertilizer

Fertilizer containing only one fertilizer nutrient, namely, Nitrogen or Phosphate or Potassium (N,P or K).

2.2.4. Compound Fertilizer

Materials containing two or three of the primary nutrients N, P & K.

2.2.5. Complex Fertilizer

Complex fertilizer is one which is made by process involving chemical reaction between the raw materials and intermediates used.

2.2.6. N,P & Ratio

The ratio contents of fertilizer nutrients in a fertilizer. (e.g.) a fertilizer with analysis 12-12-18 has a 1-1-1.5 ratio of N, P₂O₅ and K₂O respectively.

2.2.7. Fertilizer Requirement

One unit of plant nutrients in kg/ha required by a crop during its growth period, assessed in relation to soil and other growing conditions to obtain the yield in kg/ha.
2.2.8. Fertilizer Recommendation

Advice on specified type and amount of fertilizer to be applied, taking account the soil analysis and/or other information on the crop and the soil.

2.2.9. Economic Optimum

The quantity of fertilizer to be applied, taking into account value of the crop and cost of fertilizer, to achieve a particular business objective, such as maximization of profit or minimization of cost in crop production.¹

2.2.10. Demand Management

Demand management, which in large part would be the marketing management, consisted of analysis, planning, implementation and control of programmes designed to create, build and maintain mutually beneficial exchanges and relationships with target markets for the purpose of achieving organizational objectives. It relied on a disciplined analysis of the needs, wants, perceptions and preface of target and intermediary markets on the basis for effective product design, pricing communication and distribution. Demand management would address itself to the task of
regulating the level, timing and character of demand in a way that would help the organization to achieve its objectives.²

2.2.11. Market Structure

Shepherd defined structure as, the size distribution of firms within the market. The main horizontal elements of market structure are: the market shares of firms, concentration among the leading firms, and barrier to potential competitions.³

2.2.12. Factor Demand

Desai and Singh defined the demand for factors of production as a derived demand. It was derived from the demand for product they helped to produce. Greater the consumer demand for the product, the greater the producer’s demand for the factor required in producing them. The demand for fertilizer and chemicals was then a derived demand.⁴

Zeaudeen defined the factor demand as a derived one. The producer’s input demands were derived from the underlying demand for the commodity which he produced. The producer’s input demand functions was analogous to the consumer’s ordinary demand function. Changes in the quantity of fertilizer demanded would therefore, be
explained by the shifting of the agricultural productions function, and changes in fertilizer price relative, to the product price.\textsuperscript{5}

2.2.13. Factor Market

Market may be properly described as the entire area within which the forces of demand and supply of a given commodity or service interact in effecting exchanges and establishing prices.\textsuperscript{6}

According to Balakrishnan, a market might be an institutional or an organizational set up or a course of commercial activity, which facilitated the exchange of produce or commodity from the producer or manufacturer to the consumer or user.\textsuperscript{7}

Vetriselven defined the factor market as an institutional set up that direct the flow of factors of production from producer to final user.\textsuperscript{8}

From these differing view points, the term factor market could be interpreted in several ways such as institution, organisation, place, functionary, or intricate system of commercial activity. For the present study, a factor market is defined as an institutional frame work which
facilitates the direct flow of fertilizers from the manufacturer to the user, namely, farmers.

2.2.14. Concentration

Clark and Davis said that concentration in the market was concerned with the dominance of individual markets by the leading firms.⁹

George referred seller concentration to the number and size distribution of firm operating in a particular market. Seller concentration referred to either percentage shipment (or) capacity accounted for by the larges in an industry.¹⁰

Davis and Lyons said that the level of seller concentrate depended on two characteristics: their number and the inequality of their size.¹¹

The buyer concentration might be described in a parallel fashion to that of seller concentration. In the market for fertilizers, the sellers referred to dealers and buyers referred to farmers.
In the present study, the concentration was measured by the number and size distribution of fertilizer firms (or) dealers and farm households in the sample villages.

2.2.15. Product Differentiation

Product differentiation in fertilizer would be in the form of differences in nutrient content, packing, delivery terms, weight, and colour.\textsuperscript{12}

Sosnick said that a customer might differentiate between products based on the following criteria: 1) Quality, 2) Price, 3) Credit, 4) Brand, 5) Taste, 6) Location, 7) After-sales-service, 8) Variety and 9) Attractiveness.\textsuperscript{13}

According to Thomas, a company and its products might be differentiated by: logistical arrangements, terms of sales, services, packaging of products, product mix and the like. However, the way a company managed its marketing to the process of marketing management itself was the most powerful for a differentiation. Indeed, that is the way some companies in the same industry differ from most others.\textsuperscript{14}
In fertilizer: its nutrient content, packaging, and services of the sellers, were the major factors of product differentiation and this study would pay attention to these aspects.

2.2.16. Conduct

Conduct of a market arose from its structure and it referred to the behaviour pattern of the market functionaries, which was conditioned by the structure and its performance. Thus, it could be described by: the price behaviour, product strategy, research and innovation, advertising, and legal tactics.15

George and Singh defined conduct as the pattern of behaviour which the firms followed in adopting (or) adjusting to the markets in which they would buy (or) sell.16

Caves said that a market conduct could be studied by dividing into three major areas of business policy, namely, policies towards setting prices, policies toward setting the quality of the product, and policies aimed at coercing rivals.17
2.2.17. Performance

Chaudhary analysed the fertilizer distribution system in West Pakistan and evaluated the performance based on: the progressiveness in absorption of new technical knowledge, generation of organizational and product innovation, availability of personnel to guide the farmer, research efforts and incentives, channel efficiency through reduction in cost of production and distribution, transfer of the benefits of reduced cost benefits to farmers, interaction between channels and producers and between producers and farmers, efficiency in functioning of the channels in effectively meeting the increased demand for fertilizer products, and transmission of effectiveness in conveying the needs to producers.\textsuperscript{18}

Sherer described performance in any system in terms of efficiency in production, allocation and achievement of progress, full employment and equity.\textsuperscript{19}

2.2.18. Promotion

Promotion described all the activities designed to induce intermediate and ultimate consumers to buy a product (or) service other than normal sales calls.\textsuperscript{20}
Fertilizer promotion was a general term that covered terminologies such as: fertilizer use development, and fertilizer usage promotion, with the prime objective of increasing the overall fertilizer use on scientific lines - for increased agricultural production and sustaining soil productivity in the national interest.21

2.2.19. Efficiency

Efficiency in any field might be defined as the capability of generating desired effect in relation to cost, essentially in terms of savings in time, money, and energy. Marketing efficiency could be achieved by improving adoptability of the product by the consumers, economic utilization and distribution of resources, improving the communication system, reducing inventories, and raising the sales turnover, which would ultimately lead to reduction in the cost of marketing.22

Efficiency in any system might be measured by the output obtainable from a given unit of input. Fertilizer use efficiency had, therefore, been expressed either in the form of recovery of applied nutrients (or) in terms of additional produce obtained per unit of plant nutrient. It was closely associated with the increase in total output through choice of appropriate production technology, selection of suitable
varieties, cropping system, commensurate with availability of irrigation water, besides other inputs.\textsuperscript{23}

Fertilizer marketing efficiency might therefore be measured by the ratio of the ex-factory price to retail price of fertilizer. Lower the ratio, higher would be the efficiency. However, it should also take into account of the quality of marketing services in terms: of faster delivery, produce choice, mixed fertilizers, and farm transportation facilities.\textsuperscript{24}

2.2.20. Market Functionaries

Market functionaries were those engaged in marketing the firm’s product and were classified by the nature of functions they perform. Any classification was at best arbitrary because their functions might sometimes overlap.

Kotler referred dealer, as any firm that bought and resold merchandise at either retail (or) wholesale level. Retailers as a merchant, (or) occasionally as an agent, would be selling directly to the ultimate user. Wholesalers would buy, resell merchandise to retailers and/or to industrial, institutional and commercial users, but would not sell in significant amounts to ultimate users.\textsuperscript{25}
Vachharjani defined the wholesalers as an institutional agency or private organization. There may be only one or a number of wholesalers in an area. They distribute principal products through a number of retailers and in some cases, also retailed by themselves.26

Mammoria and Joshi defined the retailer, as a merchant (or) occasionally as an agent (or) a business enterprise, whose main business would be selling directly to ultimate consumer for non-business use.27

Fertilizer dealer was defined as a person or institution carrying on a business of selling fertilizer whether wholesale or retail.28

In addition to these distinct functional groups, there were several combinations of them also. Therefore, the various categories of market functionaries used in this study are listed below.

2.2.20.1. Wholesaler-cum-Retailer

Any person or institution carrying the business of selling fertilizer to retailers and ultimate users, and also doing business to assemble and distribute bulk quantities to other retailers, is the wholesaler-cum-retailer.
2.2.20.2. Retailers

Retailer refers to the fertilizer trader who sells the fertilizers to ultimate users (farmers). The retail firms might be, private traders in co-operative society, selling fertilizers.

2.2.20.3. Fertilizer Dealer

This referred to all the firms carrying on a business of selling fertilizers, wholesaler-cum-retailers, private retailers, and retail co-operative societies, selling fertilizers to farmers.

2.2.21. Marketing Channel

Marketing channel of a product, was the route taken by the title of goods as they moved from the primary producer, to the ultimate consumer (or) user. It was the pathway over which the commodity moved from production point to the consuming center.\(^{29}\)

Marketing channel for agricultural input was therefore described by the path through which they travelled from primary producer to ultimate users namely the farmers.\(^{30}\)
2.2.22. Buying Behaviour

Buying behaviour involves a complicated series of stimulus and response reactions to many factors or motives. These motives may be expressed on the basis of deep seated needs, or more openly felt wants. Someone buys something, he psychologically satisfied both in a need and a want. He buys a specific product out of a vast lot, because it provides him with a certain amount of mental or physical satisfaction. Modern buyers want: to know not only about the product features but also how and why the product will benefit them.

2.2.23. Demand

According to Lipsey, the amount of a commodity that household wished to purchase at a given price would be called the quantity demand of that commodity. Thus, it referred to how much households wished to purchase, not necessarily how much they actually succeeded in purchasing. This definition was applicable to fertilizer demand also.31

Farmer’s demand for fertilizer as a factor input, like any other input in agriculture, was determined by the production function and output/input prices, by Siddiqui.32
Marhata had formulated an econometric model of the demand and supply of all three nutrients (NPK) and showed that the demand for fertilizer was largely determined by the level of fertilizer prices in relation to the prices of the grains.\textsuperscript{33}

Griliches in his study on the demand for fertilizer in United States used time series data on fertilizer sales from 1911-1956. Observed that fertilizer use was a function of the 'real' price of fertilizer, the prices paid for fertilizer, relative to the prices received for farm products. He concluded that the tremendous increase in the use of fertilizer during the period of study was engineered by technological change in the fertilizer industry.\textsuperscript{34}

Heady and Yeh, using time series data for the periods 1910 to 1956 (excluding 1940 to 1955) on total consumption of fertilizers, fitted Cobb-Douglas type equation to estimate demand elasticity for fertilizer relative to fertilizer price, crop price and other relevant variables such as: cash receipts from crops and government payments, total acreage of crop land, time and income function.\textsuperscript{35}
Metcalf and Cowling employed the distributed lag model to study the demand for fertilizers in the United Kingdom between 1948-1965. For total fertilizer consumption, the distributed lag model indicated that two thirds of the adjustment towards equilibrium was made within one year. Thus the long-run elasticity was not different from that of the short-run, which was around unity.\textsuperscript{36}

Hsu, in his analysis on fertilizer demand in Taiwan, found that relative prices of fertilizers were quite important in determining the demand of nitrogenous fertilizers. He further concluded that farmer's response to the relative prices of various farm inputs in developing countries was determined, to a large extent, by the length of their experience in using them, once a threshold of experience was reached. Hsu observed that, the farmers could be very rational in their economic calculations.\textsuperscript{37}

Ogunfowora and Norman estimated the demand for fertilizer by employing the optimization approach. On the basis of the magnitudes of the elasticities obtained, they concluded that the demand for fertilizer would be most responsive to changes in capital level, followed by fertilizer cost and changes in output price.\textsuperscript{38}
Skin et.al., attempted to identify, quantify to analyse the factors affecting the demand for commercial fertilizer in Korea. They utilized the cross section data and fitted linear demand functions for the total and individual nutrients at national and regional levels. All demand functions were as per farm and per acre basis, and were almost the same, at national and regional levels in terms of sign and significance of co-efficients.39

Salam attempted to estimate the contribution of fertilizers and other farm input, to the production of major crops in the Punjab Province of Pakistan. The study was also designed to determine the influence of various agro-economic factors on the use of fertilizers from time-series data. The production function was the major analytical tool used in this study to analyse the cross section of data. This method was also used to analyse, the impact of agro-economic factors on fertilizers use, from the time-series data. The analysis suggested, that the relative prices of nitrogenous fertilizers were quite important, in influencing the use of the fertilizers during the period 1959-60 to 1972-73.40

David had analysed the factors affecting the fertilizer demand in the Asian rice economy, using both the recursive model and the direct demand model. The study revealed, that the difference between fertilizer-
rice price ratio and fertilizer response co-efficients of production functions, had contributed significantly, to the variation in fertilizer demand. Roughly, one-third of the explained variation in fertilizer use, was accounted for, by price differences and the remaining two thirds, by environmental and varietal factors. She also concluded that production response to fertilizer was low, (one kilogram of nutrient returning 10 kilograms of rough rice or less) which confirmed with earlier studies about fertilizer efficiency on farmer’s fields. The study also revealed that the fertilizer demand was, more price elastic in the long-run than in the short-run.41

Lee had derived a factor demand function from the production function and reported the existence of an important complementary relationship, among conventional inputs. The major determinates of fertilizer use were: varietal change, land, and water development.42

Akilulu, using regression analysis, had noted that the level of fertilizer use could be explained by the profitability of the input, its complementarity to available resources, and the extent of contact users had with the extension agents. The differential time of initial fertilizer use, was accounted for by the difference in access to information and the
small farmers and tenants lagged behind the larger farmers and owners, in the time of adoption.43

Yotopoluas et.al., used the profit function approach to analyse the data from a cross section of farm households in the Province of Taiwan and included fertilizer as one of the variable inputs. They have found that the estimated price elasticity of fertilizer demand was -1.2306 for the pooled data of 1967 and 1968.44

Sankhayan and Sirohi derived the static normative demand function, for fertilizers with the use of parametric programming, to analyse the effect of credit availability and fertilizer's price, on the demand for fertilizers. The results showed, that the price of fertilizers and availability of timely credit to the farmers, to purchase different farm inputs, acted as important determinants of demand.45

Jayaraman using regression analysis, found that the quantum of fertilizer used was inversely related to its price.46

Singh and Goel fitted fertilizer response function, to study the impact of increase in the prices of fertilizers on the production and
profitability of rice and wheat cultivation, under cultivator’s condition and observed, that the optimum rate of fertilizer application was sensitive, to the change in the fertilizer output prices. An increase in the price of fertilizer led to, substantial decrease in yield of rice or wheat crop.  

Falusi used multivariate profit function, to study the fertilizer use decisions of farmers, in Nigeria and found that the stimulus index of the fertilizer application, was influenced by institutional and educational consideration than by economic factors. The stimulus level associated with variables, such as: frequency of extension contact, attendance at farmer’s meetings, membership in cooperative societies and/or farmers association, and capital or credit supply was much larger than, that associated with factors such as: farm size, labour input, and crop prices. He further pointed out that the profitability, undoubtedly was a necessary but not a sufficient condition for adoption.

Larson and Cibontes employed, both the traditional demand model and Nerlove adjustment model, to estimate the demand for fertilizes in the Southern Brazil, considering fertilizer use, as a function of: relevant product and input prices, area cultivated, crop yield, and time. Based on the results of the adjustment model, they observed, that none of the
variables considered was, statistically significant except price which alone explained fertilizer demand well. They have further reported that the latter one was a better fit of the demand function, than the former and the elasticity of demand for fertilizer, was inelastic (-0.25) in the short-run but elastic (-2.50) in the long-run.49

Jayaraman fitted linear function to analyse, the causes for the differences in fertilizer consumption, in Gujarat state between 1967-68 and 1973-74. He observed that the irrigation continued to remain as a significant factor, in determining the use of nitrogen. Besides, in the latter period, rainfall and cash crop also emerged as variables influencing the use of nitrogen significantly.50

Nevala analysed inelasticity of price ratio, between fertilizer and farm products, and farmer’s response, however, spread with respect to time. He used polynomial and Nerlovian models, to study the demand for fertilizers.51

Dhillon and Shankhayan divided the entire state of Punjab into three homogeneous crop zones and studied the demand for fertilizer in these zones. They found that the price elasticities of demand for
fertilizers in these zones were -0.1040, -0.2612 and -0.2964 respectively and hence concluded that the demand for fertilizer was inelastic.52

Dhillon and Sidhu used parametric programming, in the absence of time-series data for demand analysis. The demand for fertilizer was estimated, indirectly employing the parametric programming technique, in combination with regression analysis. The requisite data generated through the parametric programming, were used to fit a regression model for demand.53

Sidhu and Baanate, from their Cobb-Douglas based profit function analysis, of the factors of demand in the production of Mexican wheat varieties, concluded, that constant returns to scale prevailed, in the wheat farms of India Punjab. And also they concluded, that the price elasticity of demand for labour, for fertilizer, and for irrigation water, were all elastic.54

Ownsu estimated fertilizer demand and supply functions using ordinary least square method. The estimated function exhibited high degree of autocorrelation. Hence, a two stage least square procedure, was
followed using pooled data. The results indicated that fertilizer-crop price ratio, was important in explaining variation in fertilizer use.\textsuperscript{55}

Dhillon and Sankhayan employed parametric linear programming model, to generate the requisite data for the estimation of fertilizer demand function. They concluded that the elasticities of demand for fertilizer, with respect to its price were very low, and close to zero, indicating that the demand for fertilizer was inelastic. The price was positive and varied from 0.1624 to 0.4309. They also indicated that the availability of working capital acted as an important variable, affecting the demand.\textsuperscript{56}

Carman estimated the demand for fertilizer (NPK), for individual states in western USA, and pointed out that, the future shifts in fertilizer demand would be highly dependent on changes in agricultural productivity and the expected crop-price and land-price directly influenced the consumption of fertilizer. And, the estimated price elasticity of demand indicated, considerable variation between States and nutrients.\textsuperscript{57}
Boyle used translog cost function to estimate the own and cross price elasticities of demand for nitrogen, phosphorus and potash. The result indicated a mean value for the own elasticities of -1.0, -0.6 and -0.5 for nitrogen, phosphorous and potash, respectively. He found that phosphorous and potash were substitutable for nitrogen, but not for each other. The result was corroborated by a zero elasticity substitution between phosphorous and potash.\textsuperscript{58}

Patil and Pandey fitted a distributed lag model to examine the influence of economic and agronomic factors in determining the application of phosphatic fertilizers, at macro level. Here, the assumption of input-output relationship and price ratio was less appropriate. The farmer had imperfect knowledge on production function and continuous changes in the technology. So, the derived level of nutrient use, depended on its real price and other related variables.\textsuperscript{59}

Patil and Pandey, used Cobb-Douglas production function to estimate the demand for fertilizer. They studied the level of consumption of nitrogenous fertilizers, at macro level and observed that irrigation was the most dominant factor, whereas, the other factors exhibit varying degrees of significance.\textsuperscript{60}
Sidhu and Baanante applied the translog profit function, to the farm level data from Punjab, which permitted the measurement of the different impacts that the exogenous variables have within and across, input demand and output supply functions. Their study revealed that the elasticity estimates of fertilizer utilization with respect to: variable inputs, fixed inputs, output prices, soil fertility status, and education, usually influenced the fertilizer utilization.\footnote{\textsuperscript{61}}

Sharma employed multiple regression analysis to estimate the demand for fertilizers in Andhra Pradesh. He concluded that the rapid increase in irrigated area under high yielding varieties, and fall in the ratio of fertilizer price to wage rate and to weighted average crop price, would increase the demand for nitrogenous fertilizers, to a great extent. He further observed that, the trend variable played a major role in determining the demand for fertilizers.\footnote{\textsuperscript{62}}

Jabber and Islam found that demand for fertilizer in Bangladesh was influenced by non-price factors, such as: high yielding varieties, acreage, and area under irrigation, rather than price. They estimated the demand for fertilizer using aggregate time series data on fertilizer sales, as the dependent variable for 1968-78. The estimated price elasticity was
0.17. They argued that the subsidies on fertilizer did not contribute much to the growth of fertilizer use and the subsidies constituted a heavy burden to public exchequer, so that no subsidy could be reduced or eliminated without affecting the demand.63

Vetriselvan derived the demand functions for nitrogenous fertilizers in Thanjavur district, Tamil Nadu, for crops like: paddy, maize, and groundnut. From the Cobb-Douglas type of production function, for the profit maximizing observed that the derived demand for nitrogenous fertilizers was downward sloping.64

Zeauden estimated the fertilizer demand by, using both recursive model and co-variance model and found that, the estimated short-run price elasticity of demand for fertilizer, was inelastic and in the long-run, elasticity of fertilizer response was about one-third times higher than short-run elasticity. He observed that fertilizer price, rice price, rent, and manure, were influencing the farm level fertilizer demand.65

Pradhan employed linear regression model and semi-log regression model to derive the demand for fertilizers. The results showed that the
price of nitrogen, farm size, distance, and percentage of area under gross cropped area, were the factors determining the demand for fertilizer.66

To study fertilizer use efficiency and derive demand for fertilizers, a production function was fitted and studied by Venkataram, in Thovalai Block of Kanyakumari District. Results of production function analysis indicated that, nitrogen and labour significantly influenced the yield of paddy crop, in both the seasons. The demand for nitrogen was derived from the production function, by equating the first order derivative of production to the input/output price ratios. The derived demand for nitrogen fertilizer, was downward sloping.67

Nasurudeen used a log-linear multiple regression model and relevant parameters were estimated, using ordinary least square method. The statistical result of the demand function indicated that, price of nitrogen and income of the farmer, significantly influenced the demand for total plant nutrients (NPK). He also established that the demand for fertilizer was elastic, in his study area, for changes in the price of Nitrogen.68
Gaja et al., fitted the regression equation and found that the wheat yields depended upon: the quantity of fertilizer used per hectare, which was itself affected by: the relative price of fertilizer, the price of wheat, and area under HYV wheat.69

Bapna et al., found that the fertilizer demand elasticity for the semi-arid tropic as a whole, were lower than, for the sub-region. The cross elasticity between fertilizer and labour was always positive, indicating that the two factors were the substitutes.70

Flinn and Shakya attempted to identify the factors influencing adoption of inorganic fertilizers on MV wheat. Tobit models provided an estimate of the probability, that a specific farmer would be an adopter and for adopters the level of fertilizer use increases. Also found that, owner farmers with larger areas of wheat were more likely to use fertilizer at higher rates than tenants with smallest wheat area.71

Ramaswamy et al., identified the determinates of fertilizer use at the farm level. The relationship between, the use of fertilizer to rice crop and the relevant price and non-price factors were conceptualized and estimated. From the results, they found that the parameters for price of
fertilizer was negative but statistically not significant and the parameters for irrigation, education and credit were statistically significant.\textsuperscript{72}

Subba Rao et al., indicated that an one per cent increase in fertilizer use would raise the output by 0.44 per cent in straight varieties of fertilizer, when using Cobb-Doughlas production function for analysis. He also indicated that the fertilizer response was negative but not significant in hybrids.\textsuperscript{73}

Rajagopalan and Varadarajan, estimated the effects of possible bias of technological change on factor shares in crop income. They used Cobb-Doughlas production function and showed that the new high yielding varieties represented, a neutral technology in the use of labour and capital.\textsuperscript{74}

\textbf{2.2.24. Brand Image}

Brand image has been defined as, perceptions about a brand as reflected by the brand associations held in consumer memory. Brand image consisted of: types of brand association, favourability of brand associations, strength of brand associations, and uniqueness of brand associations. The types of brand associations were classified into:
attributes, benefits and attitudes. Attributes referred to those description features that characterized a product, as understood by the consumer. They were distinguished as: (a) product related attributes - those related to the product’s physical composition and (b) non-product related attributes – those that relate to the product’s physical composition and appearance information (c) user imagery - what type of person uses the product? and (d) usage imagery - where and in what types of situations the product is used? Benefits referred to the personal value that the consumer attached to the product or service attributes. Benefits were further classified into: functional benefits (intrinsic advantages), experimental benefits (relates to what the consumer feels regarding use of the product) and symbolic benefits (extrinsic advantage). Brand attributes referred to the overall evaluation of a brand (Keller, 1993).

In the study, the brand image is considered as a composite of the experiential benefits that a farmer linked to the use of a brand and non-product related attributes – price and packaging.

2.2.25. Attitude

According to Eysen and Wilson (1976), attitude may be defined as a relatively enduring evaluative orientation towards a particular object or
class of objects. It represented a fairly persistent ‘point of view’ with respect to something. Whether, it be favourable, unfavourable or even neutral. This did not mean, attitudes can never be changed but they were inclined to be very resistant to change. Attitude has three components, namely; cognitive, affective and behavioural tendencies.

David and Bitta (1988) opined that attitude was: a positive or negative, favourable or unfavourable, response that a person reflected towards the object. It was an outcome of an enduring organization of: motivational, emotional, perceptual and cognitive process with respect to some aspects of the individual’s world. Attitude has direction, degree and intensity. A consumer’s attitude can be formed and changed through personal contacts with friends, relatives or experts and also by other members in the group, they belong to.

In this study, the attitude of the peer group towards use of herbicides referred to their ‘point of view’ and cognitive evaluation of favourability or unfavourability of herbicide use for wee control.
2.2.26. Brand Knowledge

Fazio, and Mark (1981) had reported that highly accessible brand attribute were more likely to be activated spontaneously upon exposure to the brand and guide subsequent brand choices.

Dhunna, (1984) while studying consumer behaviour noted that the brand awareness was more in male than in female.

Wilkening (1986) found that mass media were particularly effective at the stage of awareness and that the word of mouth was more effective in the evaluation stage of adoption process.

Sivakumar (1987) reported that the quality of a preferred brand, advertisement, and price of the brand had significantly influenced the farmers in purchasing that brand.

According to Robinson (1991) consumers with strong, favourable brand attitude would be more willing to pay premium prices for the brand.
Ramalingam (1994) in his study on brand preference regarding fertilizer among farmers and dealers in Pollachi taluk used Garett’s scoring technique to rank the brands.

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