CHAPTER II : REVIEW OF LITERATURE AND CONCEPTUAL FRAMEWORK

2.1 Introduction:

In this chapter an attempt has been made to review the literature, related to production, productivity and marketability of horticultural crops. There are comprehensive studies made available on economics of area, production, productivity and marketing of horticultural crops, growth rate, status of farmers, market integration and cost and returns. Reviews have presented under the following broad heads.

1. The growth and trends of horticulture sector.
2. Growth rates, area, production and productivity of horticultural crops.
3. Cost of inputs and returns in the cultivation of horticultural crops.
4. Marketing channels, marketing costs and price spread.

2.1.1 The Growth and Trends of Horticulture Sector

According to Ramaswamy, agriculture still contributes significantly to export earnings and supplies raw materials to many industries. The expansion in the use of seed, fertilizer, agrochemicals, irrigation and agricultural machinery industry has occurred parallel with the growth in productivity of rice, wheat, cotton, corn, sunflower, soybean, sugarcane and vegetables. While the public sector R&D, extension, and seed supply has made substantial contributions to food and non-food crops production (Ramasamy, 2013).

Development of the horticultural sector assumes significance in view of its capacity to provide livelihood sources to a large number of farmers and also help in ensuring food and nutritional security in view of the declaration of the agricultural growth rates that the state has been witnessing. Though area and production of horticultural crops has increased in the previous decade, it is far from satisfactory as productivity levels are low especially for fruits, and horticulture development has not received the thrust it deserves (Srijana, 2013).

The public sector is probably not in a position to deliver all the services to the farmers on its own. The involvement of private sector should be encouraged and public-private partnerships may be forged to deliver the agricultural extension and input services to the farmers (Ajit, 2012).
To develop a number of strategies especially for the poor people to facilitate successful livelihood diversification. This includes the development of rural infrastructure in terms of road, market, electrification, telecommunication, storage facilities, etc. and also institutional innovations to reduce entry costs and barriers to poor livelihood groups. A comprehensive development plan, including increasing the scope for non-farm activities, for the backward regions is most urgent (Dilruba & B.C, 2012).

The crop diversification in the Karnataka state for a period from 1982-83 to 2007-08 using Composite Entropy Index (CEI) and multiple linear regression analysis. Crop diversification influences production it also influenced by a number of infrastructural and technological factors (Saraswati, H, L.B, S.B, & A.R.S, 2011).

The demand for fresh fruits and vegetables are in perishable nature and very short shelf life, these commodities faced the challenges and opportunities in supply chain management to create a bridge between rural and urban market of India should be collaborated through proper vendor management (Piali & Simayan, 2011).

To shift in demand pattern/consumption pattern towards the high value crops, the farmers have also responded to market signals and gradually shifting production-mix to meet the growing demand for high-valued commodities. This is reflected in the changing share of high value crops in total value of output from agriculture. There is a clear shift from food grains towards fruits and vegetables. The share of high value crops (fruits and vegetables) increased from 37.3 percent in TE 1983-84 to 41.3 percent in TE 1993-94 and reached a level of $7.4 per cent in TE 2007-08 (Vijay & Dinesh, 2011).

The demand for food in India has been examined in the context of a structural shift in the dietary pattern of the population. In this paper observed that the demand elasticity has been vary widely across the income groups and food commodities. The study found that the per capita consumption of cereals has declined by 11 per cent to 21 per cent due to dietary diversification towards horticultural and livestock products as well as rise in price of cereals in real terms. So the estimated income elasticity vary across the income classes and are lowest for cereals group, highest for horticultural and livestock products. The study concluded that the price and income effected based on the estimated demand system has suggested that with increase in food price
inflation, the demand for staple food may not be affected adversely, but that of high value food commodities is likely to be affected negatively (Kumar, 2011).

The India is a major supplier of turmeric to the world with more than 60 percent share in turmeric trade. The growth in production and export of turmeric has been reported significant, because of the high demand coupled with inflation (Angle S, 2011).

According to Deshmukh, the post liberalization period is marked by an increase the export of agricultural commodities in general and horticultural products in particular aspects. The researcher found that the horticultural crops exports have increased from Rs. 495.56 crores in 1991-92 to Rs. 7811.48 crores in 2008-09. The unit value of horticultural crops increased from Rs. 8.24 per kg in 1991-92 to Rs. 22.12 per kg in 2008-09. The compound growth rate of export of horticultural products from India in terms of quality recorded 11.7 per cent and in terms of value recorded 16.27 per cent growth in the period 1991-92 to 2008-09. As a result, the export of Indian horticultural products in value terms have increased considerably in the post reform period, but still the share of India’s horticulture trade is negligible (Deshmukh M.S, 2010).

In South Asian Countries is focused on diversification of agriculture to high value commodities. In this study found that the food demand in South Asian Countries will have to produce not only additional food, but also diversify food production towards products of higher nutritional value. As a result, higher nutritional value such as livestock and horticultural sector will generate additional income to the small and marginal farmers and reduce poverty and undernourishment and will be contributed to special empowerment (Praduman, Mruthyunjaya, & Ramesh, 2010).

To emphasize on prices of related products and income were often statistically significant determinants of import demand in horticultural commodities. This indicated that trade liberalization has been important for food manufactures and firms that import horticultural commodities to be used as ingredients (Bradley J. Rickard et al., 2009).
The agricultural development (including all crops viz., food crops, commercial crops and horticultural crops) of 175 talukas of Karnataka state based on 18 indicators estimation for the year 2001, by using quantitative and statistical methods. In this study revealed that 106 talukas of Karnataka show that less than 3 per cent of land under horticultural crops, where further development of horticultural crops can be strengthened as there is positively very high significant correlation between net area sown and horticultural crops (Bhiradi & Kotyal, 2009).

Small and poor farmers actively participate in the emergence of China’s horticulture economy. Moreover, there has been almost no penetration of modern wholesalers or retailers into rural communities (Wang, 2009).

According to Pradeep Kumar Mehta, in his study reveals on the micro-level decisions about shift of area in favour of high-value crops were analyzed in terms of the level of substitution of food crops (wheat/maize) by high-value crops (apple/cauliflower). The study found that the both fruits and vegetables are high-value crops that promise huge gains in terms of output per hectare and to improve the household food-security through higher net income. It could be lead to an increase in the consumption level and standard of living of farm households. However, high fluctuations in the prices of horticultural crops could potentially prove detrimental to the food-security of these farm household (Pradeep, 2009).

The Indian agriculture is diversifying towards production of high value commodities along with the increasing role of small holder’s farmers. Small farmers are the key to initiate the horticultural revolution and with technical change and increase in the international competition. Large scale operations and vertical integration take place in the horticultural sector. The diversification towards horticultural sector needs to be planned as it offers an attractive option and a major source of pushing up growth of the agricultural sector (Surabhi, 2009).

The horticultural sector of the country and its prospects during the Eleventh Five Year Plan period 2007 to 2012. The study revealed that the share of fruits, vegetables, and plantation and spices crops would continuously increase, while the share of field crops would decline and the share on nuts and flowers would be constant during the Eleventh Five Year Plan period (Singh & Mathur V.C, 2008).
The importance of horticulture in agricultural growth is the profitability of horticultural crops via-a-via other crops. Among horticultural crops, vegetable generate quick returns, requires less capital and more labour, which match the resources endowments of the small farmers while, fruit and some condiments and spices require high start-up capital and have a long gestation period, the small farmers are capital constrained. The study conclude that the small farmers more diversified towards vegetables because of surplus labour and liquidity constraint (Pratap, Joshi P.K, & Narayanan A.V, 2008).

According to Surabhi Mittal, the economic feasibility of diversification of cropping pattern away from cereals to fruits and vegetables show that it is economically viable and beneficial to shifts horticultural production. In the changing consumption patterns and diversification to encourage the light of shortage of supply to increased domestic demand (Surabhi, Can Horticulture be a Success Story for India?, 2007).

The probability of fruits and vegetables cultivation as well as land allocation to horticulture decreases with the size of land holdings in India. Small/medium holders do not appear to allocate a greater share of land to fruits and vegetables. However, the share of the vegetable is significantly higher if the family size is bigger (Birthal P.S, 2007).

To utilize the resources in order to successful in small scale fruits and vegetables production. In addition to that, more efficient production methods geared at small scaled operations needed to be developed in order to reduce in production costs. Moreover, better information regarding the benefits from eating locally grown fruits and vegetables needed to be communicated to citizens living in the rural communities (Jon, 2007).

The modern supply chains and the risk of the horticultural economy in China on the farming sector. In this study found that reinforce the propensity for small and poor farmers to be increasing their participation in the horticultural economy, while the super markets are almost completely absent from the production areas (Honglin, 2006).
The viability of small holders/small farmers can be improved through diversification of agriculture into higher value crops like fruits and vegetables. Finding show that the small holders are relatively more efficient in vegetable production is more profitable and labour-intensive and generate employment opportunities in rural areas. Women are also benefited as the vegetable production engages most relatively higher women labour in various operation (Josh P.K, Joshi, & Birthal, 2006).

Indian agriculture is diversifying during the last two decade towards high-valued commodities. As a result, the study reveals the high-valued commodities account for a large share in the total value of agricultural production and small farmers would be the major beneficiaries of high production of HVCs (Parthasarathy, 2004).

### 2.1.2 Growth Rates, Area, Production and Productivity of Horticultural Crops:

According to Sharma Amod have analysed that the trend in area, production and productivity of food grain in India by using linear, quadratic and exponential functions. The study found that the ‘c’ value in the quadratic functional forms for area, production and productivity are positive and significant for the total food grains in the country more particularly during Phase-I, Phase-II and Phase-III. The growing of food grain crops is not risky as the CV of area, production and productivity of food grain crops are less than 0.322 per cent. The instability indices for area, production and productivity for food grain crops are positive which also indicates less risk in growing food grain crops in future too. The increase in production occurs due to increase in area as well as interactions of area and productivity of food grain crops in the periods under review (Sharma, 2013).

According to Biswas, conducted to survey on two farmers. One is - Sholapur district of Maharashtra and another from Jalpaiguri district of West Bengal. These two farmers will be a success in produce papaya crop yielding is very high and gives high profit. But the productivity (average) increase in marginal (Biswas B.S, 2010).

The farmers are mainly depends on groundnut cultivation in Andhra Pradesh. The production of groundnut in Andhra Pradesh was accountable up to 66.89 per cent,
that is major share in total oil seeds production and productivity under groundnut was registered a significant and positive growth rate in Andhra Pradesh (Krishna, 2009).

According to Fath Mohammad Mari, have analyzed that the vegetable production and marketing efficiency in Pakistan by using Cobb-Douglas Production Function and the t-test was applied for testing the null hypothesis that degree of homogeneity equals 1. The study found that the mean efficiency of chillies, tomato and onion was recorded 0.83, 0.74 and 0.59 respectively. This result revealed that chillies growers were more efficient when compared to the onion and tomato growers, while tomato growers were found more efficient than onion growers. However, the study indicates that the vegetable production system is partially efficient, while the marketing system is moderately efficient. The researcher was to suggest policy measures for the government to provide stabilizing prices of perishable commodities to protect the producers in the short run and to establish market infrastructures including cool chains as a long term solution (Fath, 2009).

The probability and risk related to conventional and organic vegetable production system. A linear programming model was used to find the optimal mix of vegetables both production systems. In this study shows that higher variability existed in most of the cases in the organic production system as compared to the conventional production system. In the organic system, some acres of land were left idle due to higher production cost and higher risk involved; whereas, all the acres were used in all cases in conventional production system. Therefore, in that case profitability of organic production method can be seen as the function of price premium (Khanal K, Henneberry S.R, Taylor M, Schatzer R.J, & Epplin M, 2008).

To understand the impact of ‘precision farming1’ on resource-poor regions and underprivileged farmers. In this study has revealed that adoption of precision farming has led to 80 per cent increase in yield in tomato and 34 per cent in brinjal production. Increase in gross margin has been found as 165 and 167 per cent, respectively in tomato and brinjal farming. The contribution of technology for higher yield in precision farming has been 33.71 per cent and 20.48 per cent, respectively in tomato and brinjal production. The elasticity of 0.39 for the adoption in tomato and 0.28 in brinjal has indicated that as the probability of adoption increase by 10 per cent, net

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1 Precision farming aims at increasing productivity, decreasing production cost and minimizing the environmental impact of farming.
return increase by 39 per cent and 28 per cent in tomato and brinjal cultivation (Maheswari R, 2008).

The diversification towards horticulture got real boost to coincide with liberalisation of economy. The growth rate in output of fruits and vegetables are reached 6 per cent and condiments and spices are reached by almost 5 per cent. Those high growth rate in output of horticulture helped in raising growth rate of total crop sector from 2.03 per cent during 1980s to 3.02 per cent during 1990s. In this paper concluded that the diversification in favour of fruits and vegetables has been higher returns relating to other crop groups and the difference in productivity between horticulture and other crops (Ramesh, 2008).

The Indian horticulture sector is constrained by heavy losses in post-harvest management, resulting in low productivity per unit area and high cost of production. In this context, the research paper concluded the two case of studies - one of SAFAL market and the other of Namdhari Fresh who have tried to overcome these constraints in the horticulture sector. These cases which have been successful with able to bridge the gap between farmers and consumers by establishing an efficient supply chain in both backward and forward linkages (Mittal, 2007).

According to Throat, in their study “Total Factor Productivity(TFP)\(^2\) in Horticultural Crops in Konkan Region of Maharashtra” had analyzed the compound growth rate of inputs, output and TFP were estimated during period of 1981-82 to 2000-01 and for two periods viz. Period I (1981-82 to 1990-91) and Period II (1991-92 to 2000-01) by using the correlation coefficient equation. The study has revealed that, during total period 1981 to 2001, the higher increase in the output index (14.6 per cent per annum) than the input index (8.7 per cent per annum) has been due to the fact that the rate of increase in output prices was more than in input prices, resulting in TFP grew at the rate of 5.4 per cent per annum. In the 1\(^{st}\) period, the input index (4.5 per cent per annum) was declined, however there was the corresponding increase in output index (2.0 per cent per annum) was resulting in higher growth rate of TFP (6.8 per cent per annum). In the 2\(^{nd}\) period, a simultaneous increase in input (15.67 per cent per annum) and output (17.49 per cent per annum) resulting in a marginal increase in TFP (1.30 per cent per annum). Above the overall picture shows a

\(^2\) TFP implies an index of output per unit of total factor inputs measures shift in output holding all inputs constant.
satisfactory growth in TFP, indicating thereby that there is a potential to improve in

The performance of different states in India in coconut production and also the
relative role of area and yield in production. The study found that area effect
continues to assume greater role in output growth by almost all coconut regions of the
country. Decomposing the output growth rate into area and yield effect were isolate
the sources of growth in output and would reveal that strength of forces behind the
observed changes in output growth (Lathika M & Ajith, 2005).

The trends in area, production and productivity of Cardamom in Kerala during
the initial years from 1970-71 to 1978-79, does not show any increment. But from
1979-80, onwards it shows a marginal increase. In this study found that to explore the
economic factors influencing cardamom cultivation in Kerala. Since the prices have
played on important role in determining the decision-making of the
cultivators/planters, a detailed analysis of the growth of prices and their likely impact
on different segments were checked (Varghese P. K, 2004).

2.1.3  Cost of Inputs and Returns in the Cultivation of Horticultural Crops:

The characteristics of the local labour market also affect the trade-off between
permanent and seasonal wage labour. This result provides insights on the
substitutability of the two labour types, especially when the local labour market is
tight. Moreover, the substitution of seasonal-wage labour for permanent-wage labour
can occur in the agricultural sector as a mean of increasing flexibility as well as
reducing costs and commitments. Finally, family labour is found to substitute for
wage labour and more specifically for seasonal-wage labour (Aurelie & Celine,
2014).

In Dutch arable farms have substantial inefficiency in the use of pesticides and
high pesticide environmental inefficiency, and appear rather unconcerned about the
environmental impacts of their current pesticide use decisions on next period's
production environment (Theodoros & Alfons, 2014).

The financing constraints affect farmers’ investment decisions as indicated by
a positive and significant relationship between a measure of internal finance
dependence and investment (Conor, Carol, & Thia, 2014).
The output variability in both production technologies is mainly caused by production risk. Land and labour are identified as risk-increasing inputs in both farm types whereas higher capital endowment, seed costs and soil quality have risk-reducing effects (Torben & Uwe, 2013).

According to Venkatesh, have found that the wages were lower for farm labours than non-farm labour, the growth rate of agricultural wages has been higher than of non-farm wages. The wage determinant analysis has revealed that agricultural productivity and rural non-farm employment have a positive influence on agricultural wages, while labour availability (labour land ratio) and high dependency on agriculture pull down the wage rates. The analysis has confirmed that the growths of agriculture and rural non-farm employment have trickled down to the agricultural labour, indicating an inclusive growth. The finding shows that policies directed towards improving agricultural productivity and promoting rural non-farm employment would provide better agricultural wage rates and assure rural livelihood security (Venkatesh P, 2013).

According to Brij Bala, stated that the cost and returns structure has been reported for the production of major off-season vegetables. In this study was revealed that per hectare cost was highest for tomato (Rs. 54,800/ha), followed by cabbage (Rs. 34,200/ha), cauliflower (Rs. 33,400/ha) and lowest for peas (Rs. 28,600/ha) among the selected vegetables. However, per quintal cost of cultivation has been found to be highest for peas (Rs 257/q), compared to cauliflower (Rs 206/q), tomato (Rs. 160/q) and cabbage (Rs 716/q). Gross returns as well as net returns per hectare have been observed to be highest for tomato (Rs 5, 12,000/ha), followed by cauliflower (Rs 1, 69,900/ha), cabbage (Rs 1, 61, 700/ha) and peas (Rs 1, 38, 500/ha). The study has concluded that the off-season vegetable cultivation is a highly remunerative enterprises in the study area (Brijji, 2011).

The horticultural householder production systems are highly labour-intensive with a low capital input. In this study provides household profit optimization, to compare with the optimum profit derived from plots based on household labour, a share cropping labour contract and a wage labour contract. While controlling for irrigation equipment considering the average rate of supervision of wage labour applied by the household which is estimated at 24%, the results suggest that an
average, on plots without motor pumps, a share cropping contract provides to the household, a higher optimum profit than a wage contract does consequently. Researcher concluded that the improvement of irrigation equipment is required, not only to make the production system by less labour-intensive and to reduce the horticultural household’s labour dependence on share cropping and wage labour, but also to enable large-scale production and to improve the economic performance (Ndoye, 2010).

The technical efficiencies of tomato production in Karnataka, under three production situation, viz., small, medium and large farms by using Data Envelopment Analysis and log linear regression models. An overall view of results revealed that, only about 20 per cent of small farms were found the average technical efficiency score was 0.7768 and about 50 per cent of medium farms found the average technical efficiency score was higher in this category at 0.8187 and only about 16.7 per cent of large farms were found the average technical efficiency score for the entire group was 0.7287, which is the lowest when compared to other categories of farms. Through medium farmers have been found efficiency in view of input, with higher yields, it is the small farmers who have emerged as price efficient producers in terms of lower cost on production (Rs. 1.72/kg in small farms compared to Rs. 2.01 in medium farms and Rs. 1.85 in large farms) and higher profit (Sreenivasa, 2009).

The farmer’s investment behaviour is observed the Dutch horticulture sector. The study revealed that the only 17.8 per cent of firm experience an investment spike, but they account for 67.7 per cent of total investment. Here, however, the positive impact of a profitability shock and the negative impact of the level of capital on the probability of observing an investment spike (Natalia & Arie, 2006).

The trends of total factor productivity of major crops in India, where in the TFP increases, the cost of production would decline and the market prices would stabilize at a lower level (Kumar & Mittal, 2006).

The important role in contract farming system on potato production in Haryana state measures taken for reducing risks and minimizing price uncertainty of production. In this context study uses the linear, Cobb-Douglas Production Function and least square methods. The study revealed that the cost of potato cultivation has been found that 17 per cent to 24 per cent higher under contract farming over various
costs, under non-contract system, mainly due to high investment on inputs. So that the impact of contract farming has been quite visible and remarkably favorable on yield and profitability of potato production at the existing pattern of resource-use and production technology prevalent in farming system (Tripathi R.S, 2005).

To contract farming could be one of the best solutions which may decrease the polarization of rich and poor and thus encourage the Indian farmers. In this study found that the holdings size of the sample contract farmers indicated that processing firms favoured large farmers while selecting for contract. The contract farming system for tomato considerably reduced the yield uncertainty and completely removed the price uncertainty among its farmers, whereas it was very high in the case of non-contract farmers (Dileep B. K, 2002).

A long run programming model for analyzing investment behavior on perennial horticultural crops farms is formulated and applied to citrus and wine grape producing farms in the Murrumbidgee irrigation area. In this study revealed that the model demonstrates that water price policies and tax incentives are important determinants of the adoption of water saving technologies and that a faster adoption rate could be expected if alternate employment opportunities could be found for underemployed farm labour (Mallawaarachchi, 1992).

2.1.4 Marketing Channels, Marketing Costs and Price Spread:

The price trans- mission asymmetries are more likely in the presence of factors negatively affecting farmers’ bargaining power. The study found that the asymmetries are present in sectors with higher numbers of fragmented farm producers and less likely to occur with more concentrated farm structures (Zoltan, Jan, & Imre, 2014).

The impact of individual variables varies across different types of farmers according to their market orientation. The study found that the only two variables affect all quintiles while the effects of the variables included in the empirical model vary across different quintiles. Some variables affect the proneness to sell in the lower quintiles (i.e. for subsistence- and semi- subsistence-oriented farmers) only, whereas other variables are only significant at the upper quintiles (for semi-commercial and commercially oriented farmers) (Philip & Sophia, 2013).
The adverse market situation in the Idaho potato industry caused by the over-supply of fresh potatoes, this was effected on high price volatility and return value was below the potato production costs. The Idaho potato industry would produce only 50 per cent in the year 2004 output, which would result in a 60 per cent increase in potato price relating to the year 2004. Over all of these findings show that the contribution of the potato price increase was likely to be the most significant (Bolotova, 2010).

The net price received by the producers’ is relatively higher in the market channels where they sale the produce directly to the consumers/retailers. As the producers have been receive higher absolute net returns in vegetables (Baba S.H, Wani M.H, Wani S.A, & Shahid, 2010).

In Andhra Pradesh to examine the growth and performance of modern retailing and its impact on traditional retailers. The study revealed that the traditional value chain, 19.8 per cent of the gross value goes to farmers (No. of respondents = 79), 11.3 per cent goes to village merchant, 14.3 per cent goes to middlemen, 15.3 per cent goes to wholesalers, 20.0 per cent goes to commission agents 16.8 per cent to rythu bazar and the remaining 10.8 per cent goes to traditional retailers. The relative distribution is very different in the modern value chain, wherein farmers received 22.75 per cent of the total gross value and supermarkets received 38 per cent of the total gross value. In this paper concluded that the emergence of modern retail chains has created new food value chains which have helped in reduction of cost and production risks and thereby have increased returns from farming. Also both demand and supply side factors are contribute to the emergence of traditional and modern retailing of vegetables and fruits (Reddy G.P, Murthy M.R.K, & Meena P.C, 2010).

Amikuzuno et al (2010), conducted to consider information on seasonal patterns and on Asymmetries in Price Transmission (APT) in order to develop an appropriate model of Ghana’s fresh tomato market. The study resulting that Ghanacian tomato market can be considered to be well integrated system. The transmission of price shocks is regime-dependent and in generally very strong with error-correlation rates ranging from 10% to more than 40% during period of 2007 to 2010 (Amikuzuno, Joseph, & Ihle, 2010).
The study of “Cost Benefit Analysis and Marketing of Mushroom in Haryana”, studied the marketing cost, margin price spread and marketing efficiency of mushroom in Haryana, identified the four important marketing channels followed in disposal of mushroom.

i. Mushroom growers  →  Wholesalers/Commission Agent  →  Retailer  →  Consumer

ii. Mushroom growers  →  Wholesalers/Commission Agent  →  Consumer

iii. Mushroom growers  →  Retailer  →  Consumer

iv. Mushroom growers  →  Consumer

The majority of the farmers adopted (the maximum quantity of mushroom was sold) in channel - i (more than 80 per cent); followed by channel - ii (10 per cent); channel - iii (4-5 per cent) and channel - iv (2-4 per cent) (Ram, Bishnoi D.K, & Abhey, 2010).

The media is extensively used by vegetable growers as a sources of information with regarding vegetable cultivation. The majority of the farmers are sold the fresh vegetables in the market but only half of them were using fresh vegetables grown at their own farm for fulfilling family needs. Very few farmers were involved in seed production or sale of seedlings. Most of the farmers wanted to dispose of the fresh vegetables in the near local wholesale market (Sidhu, 2010).

According to Jema Haji, argued that pricing efficiency of vegetables actually show the traders capture with a major proportion of the marketing surplus due to market power and the audacity to absorb output price risk. By this reason the study suggested that the marketing margins supporting the larger volume of shipment of perishable commodity reduces farm prices (Jema, 2008).

The poor and vulnerable groups in society share in the benefits of a foreseen economic expansion in the demand for fruits, vegetables and flowers from consumers at home and abroad. Although, in this study concluded that the horticulture sector generate the opportunities for (self) employment in domestic marketing channels are substantial and possibly out weight the economic impact of overseas export marketing (Thom, 2007).
In China has been a remarkably rapid diversification of agriculture in only a half-decade in the Beijing region towards fruits and vegetables. For horticultural crops, the result shows strongly that the modern market channel determines the use of modern technology, as hypothesized, because farmers leave to employ new techniques to meet the product and transaction requirements of the modern channel. Therefore, the traditional market channels still dominate, but there has been a substantial increase and spread of modern channels (Wang L, 2006).

The efficiency of marketing of fruits and vegetables in India where in the adoption of open auctions in the markets are very low and so much potential for gain in market efficiency has not been realized. The study found that the share of the farmer in the consumer price works out to only 48 per cent for vegetables and 37 per cent for fruits. The profit margin after accounting for explicit marketing cost shows that the margin is frequently as high as 80 per cent to 90 per cent as a percentage of the farmer-consumer price is different. This indicates the significant imperfections and poor marketing efficiency. The study suggested that the measures required to improve the market efficiency should include wide and necessary adoption of open auction will be increasing the direct contact between buyers and sellers in the market (Vasant P, 2002).

To study on “Integration of Markets for Onion and Potato in Karnataka State” have analyzed the variation in arrivals and prices of selected commodities at different markets for a period from 1979-80 to 1998-99 by using zero order correlation and the co-efficient of variation. The study revealed that the variation in the arrivals and prices were relatively higher in potato and onion (Balappa & Hugar, 2002).

Sunil Kumar Babu et al., in their study on “Sale Pattern and Marketing of Groundnut in Andhra Pradesh”, identified two important marketing channels followed in

i. Channel - I: Producers - Village Traders - Wholesaler (Oil Processor) - oil Wholesaler - Retailer - Consumer.
ii. Channel - II: Producers - Wholesaler (Oil Processor) - oil Wholesaler - Retailer -Consumer.
The study found that the sale pattern of groundnut, small farmers were sold maximum quantity in the local market and received less price as compared to wholesale market. Whereas, who have a larger production were sold maximum quantity through wholesale market and gained higher price than small farmers. In the case of marketing efficiency of groundnut was found to be the Channel - II (7.80) was to be more efficient due to higher producers share as compared to Channel - I (6.05). In this context the producers are recommended to sell their produce through Channel - II (Sunil, 2002).

The effects of seasonality in the arrivals and prices of vegetables are further intensified by the year to year by variation in the production of vegetables. In this study findings shows that the lagged price of potato as well as onion had a positive and significance correlation with their respective current prices, but current prices had negative correlation with the current arrivals which is a normal economic phenomenon (Molla & Atteri B. R, 2000).

To develop risk coefficients for both random and total variations for selected farmers grown in North Carolina. In this study revealed that the level of price, yield or sales per-acre indexes of certain crops reflect possible ranges of favourable and unfavourable changes during a particular period (1939-1973). Several crops, mainly in horticultural crops, exhibited rather high random and/or total yield indexes. But the result shows that, the sales indexes were not much greater than either yield/price indexes taken independently (Gene, 1976).

2.2 Theoretical Framework:

According to Ricardo the returns to land as a fixed factor “for the use of the original and indestructible powers of soil. He also distinguished between productivity enhancement due to augmentation of the soil and improvements in machinery and the capitalization of various investments or policies into the value of land (Ricardo, 1821).

According to Schultz’s there is a need of an “agrarian revolution” or higher productivity through technical change in agriculture. He emphasized the man who is bound by traditional agriculture, cannot produce much food no matter how rich the land is thrift and work are not enough to overcome the niggardliness of this type of
agriculture. To produce in abundance of farm products, requires that the farmer has access to and has the skill and knowledge to use what science knows about soils, plants and machines. To command farmers to increase production is doomed to failure even though they have access to knowledge (Schultz, 1961).

The growth of overall economy depends on the development of the agricultural sector. The potential contribution of agriculture to economic growth has been an on-going subject of much controversy among development economists. The role of agriculture in promoting economic development in low income countries (Lewis, 1954) (Fei & Ranis, 1961) (Jorgenson, 1961) (Johnston & Mellor, 1961).

The “Lewis linkages” between agricultural and economic growth provide the non-agricultural sector with labour and capital freed up by higher productivity in the agricultural sector. These linkages work primarily through factor markets, but there is no suggestion that these markets work perfectly in the dualistic setting (Lewis, 1954).

If labour markets worked perfectly, there would be few productivity gains from this structural transfer (Jorgenson, 1961).

Johnston and Mellor explain the input-output interactions between the two sectors so that agriculture can contribute to economic development. These linkages are based on the agricultural sector supplying raw materials to industry, food for industrial workers, and the exports to earn foreign exchange needed to import capital goods (Johnston & Mellor, 1961).

Agricultural sector is characterized by the existence of over population. This denotes the persistent pressure of population against scarce natural resources, mainly land an initially bad and worsening land-labour or endowment ratio under conditions of stationary technology, the law of diminishing returns operates more and more vigorously as land is cultivated more and more intensively. This leads to rapidly diminishing increments in agricultural output (Fei & Ranis, 1961).

According to Mosher assumed that “getting agriculture moving” would have a high priority in national plans because of its obvious importance in feeding people and providing a spur to industrialization (Mosher, 1966).
French economist Boussard and Petit applied “focus loss” concept of uncertainty to agriculture (Boussard & Petit, 1967).

Prior attempts by various developing nations to industrialize their economy without prior development of the agricultural sector resulted in dismal economic growth rates and very skewed income distribution (Bhagwati & Srinivasan, 1975).

According to Timmer emphasized the importance of indirect non-market linkages that improves the quality of the major production factors (Labour and Capital). He also explain the resource allocations must be out of equilibrium and face constraints not immediately reflected in market prices if increase in agricultural output are to stimulate the rest of the economy at a rate that causes the “contribution” from agriculture to exceed the market value of the output, i.e., the agricultural income multiplier is greater than one. He observe that agriculture indirectly contributes to economic growth via its provision of better caloric nutrient intake by the poor, food availability, food price stability and poverty reduction (Timmer, 1995).

A positive relationship typically exists between credit use or the probability of modern technology adoption and farm size, and in some circumstances these effects seem to overwhelm the labour effects to generate a positive relationship between farm size and yield (Kevane, 1996).

The widespread lack of progress in both agricultural productivity growth and poverty reduction has promoted serious scholars to question whether agricultural growth really is crucial as an engine for growth (Dercon, 1998).

Hence, finding effective alternatives to agriculture have been found crucial in increasing the productivity of land and thereby ensuring higher returns to farmers. Given this theoretical background in present study an attempt has been made to analyze the productivity of vegetable crops as alternative to traditional agricultural crops.

2.3 Major Concepts Used in the Study:

In the following section an attempt has been made to give a brief notes about the major concepts used in the present study.
Size of Farm Holdings:

The total area of land which is held for cultivation as a single unit by an individual, joint family or more than one farmer on a joint basis. In the context of present study, farm holders are relatively more efficient in a greater share of land to produce tomato and potato is more profitable and labour intensive.

Agricultural Production:

The form of input-output patterns and the various types of interactions among the individual inputs themselves and among the products which contribute to the output.

Total Factor Productivity:

TFP implies an index of output per unit of total factor inputs measures shift in output holding all inputs constant. TFP estimated the index of input and output changes upon the tomato and potato.

Agricultural Productivity:

Agricultural productivity is measured as the ratio of agricultural outputs to agricultural inputs. While individual products are usually measured by weight, their varying densities make measuring overall agricultural output difficult. This output value may be compared to many different types of inputs such as labour and land (yield).

High-Value Crops:

To non-staple horticulture crops which have higher net returns per unit of land than staples. In the context of present study, tomato and potato are HVCs that earn huge gains in terms of output per hectare and to improve the household food-security through higher net income.

Perishable Commodity:

Farm commodities are prior to processing cannot be stored for a substantial period of time without excessive loss through deterioration or spoilage. Tomato and
potato are in perishable nature and very short life. These commodities faced the challenges and opportunities in supply chain management in marketing stages.

**Precision Farming:**

Precision farming aims at increasing productivity, decreasing production cost and minimizing the environmental impact of farming. Can increase the yield and production of tomato and potato, wherein the farmers to choose precision farming.

**Farm Mechanization:**

Farm mechanization is the process of using agricultural machinery to mechanize the work of agriculture, greatly increasing farm worker productivity. The process connotes application of machine power to work in land, usually performed by bullocks and other drought animals or by human labour. Farm mechanization implies to tomato and potato growers can increases the efficiency of labour as well as land and therefore, this will be raises the tomato and potato production of per hectare and per worker.

**Farm Labour:**

Labourers are work on annual or seasonal basis and they work on some sort of contract. Agricultural workers constitute the most neglected class in Indian rural structure. Their income is low and employment irregular. Farm Labourers can be divided into four categories - Landless Labourers, who are attached to the land lords; Landless Labourers, who are personally independent, but who work exclusively for others; Petty farmers with tiny bits of land who devote most of their time working for others and Farmers who have economic holdings but who have one or more of their sons and dependents working for other prosperous farmers.

**Farm Income:**

Farm income refers to profits and losses incurred through the operation of a farm. A farm income statement (sometimes called a farm profit and loss statement) is a summary of income and expenses that occurred during a specified accounting period. This period is usually the calendar year for farmers (January 1 - December 31).
Agricultural Marketing:

Agricultural marketing is defined as the study of entire gamut activities that direct the flow of goods and services from the primary producer to ultimate consumer. Agricultural marketing system can be analyzed by looking at the farmers’ marketing practices, marketing channels and the structure of markets. Farmers’ marketing practices and evolution of marketing system are guided by the shelf-life of the commodity. All agricultural products do not have the same shelf-life. Some products are perishable, some are less and some are even durable.

Price:

The prices are determined by the conditions of supply and the demand and the function of the market prices. Agricultural prices cover prices of agricultural products (output prices) and prices of requisites for agricultural production (input prices) at various stages of marketing.

Price Spread:

The term price spread implies gross margin/mark-up in the marketing of farm commodities. Mark-up price refers to the practice of adding a constant percentage to the cost price of an item to arrive at its selling price. Price spread enables vendors to easily calculate profits, since the net revenue from sales will be a function of the percentage by which the price has been marked up over the price paid for the item by the vendor. Price spread by measured as absolute/percentage difference in the price, paid by the consumer and price received by the farmers. The cost of marketing of tomato and potato after the produce is harvested and prepared for market which the grower has to bear.

Price Volatility:

Price volatility is found by calculating the annualized standard deviation of daily change in price. If the price of a stock moves up and down rapidly over short time periods, it has high volatility. If the price almost never changes, it has low volatility. To analyse the volatality in tomato and potato prices the coefficient of variation (CV) method was used with the help of average and standard deviation.
**Marketing Cost:**

The total cost associated with delivering goods or services to customers. The marketing cost may include expenses associated with transferring title of goods to a customer, storing goods in warehouses pending delivery, promoting the goods or services being sold, or the distribution of the product to points of sale.

**Marketable Surplus:**

Marketable surplus is the portion of a harvest that a farmer can sell on the market to earn a profit. With this profit farmers can reinvest into farming operations by purchasing more land or better farming equipment. The total quality of the commodity available for sale, out of the current production after meeting the normal requirements of the producers for household consumption. Marketable surplus to shows the level of production of tomato and potato. The majority of the farmers are sold the fresh tomato and potato in the market after fulfilling of their family needs.

**Marketing Channels:**

A marketing channel is a set of practices or activities necessary to transfer the ownership of goods, and to move goods, from the point of production to the point of consumption and, as such, which consists of all the institutions and all the marketing activities in the marketing process. A marketing channel is a useful tool for management. A path traced in the direct and indirect transfer of title to a product as it moves from a producers to climate consumers/distributors. Roles of marketing channel in marketing strategies: Links producers to buyers; Performs sales, advertising and promotion; Influences the firm's pricing strategy; Affecting product strategy through branding, policies, willingness to stock; and Customizes profits, install, maintain, offer credit, etc. There are many channels like:

- Producer – Agent – Wholesaler – Retailer – Consumer
- Producer – Wholesaler – Retailer – Consumer
- Producer – Agent – Consumer
- Producer – Wholesaler – Consumer
- Producer – Retailer – Consumer

In the context of present study, the sale pattern of tomato and potato depend on the different marketing channels.
Producer – Consumer Channel:

Wherein the consumers purchase directly from the producers in the village, so that the producers gets cent percent of the consumer’s rupee.

Producer – Commission Agents – Wholesalers – Retailer – Consumer Channel :

It is the most widely used channel, wherein the commission agents purchased from the producers in primary markets and in turn to sell (for the producers) to commission agents, who is purchase on behalf of wholesalers who is in turn sell to the retailers in towns and cities. The producers/farmers to sell tomato and potato in a primary wholesale market either direct to the commission agent or retailers pass it on to the consumers.

Wholesalers:

Wholesalers are one of the important middlemen in the channel of distribution who deals with the goods in bulk quantity. They buy goods in bulk from the producers and sell them in relatively smaller quantities to the retailers. In some cases they also sell goods directly to the consumers if the quantity to be purchased is more.

Retailers:

Retailers are the traders who buy goods from wholesalers or sometimes directly from producers and sell them to the consumers. They usually operate through a retail shop and sell goods in small quantities.

Commission Agent:

A commission agent works for a principal and derives compensation from actual sales, usually expressed as a percentage of sales. They locate buyers for goods/services, provide information about the product, make the sale, and ensure delivery and follow-up service.

In the above section reveals the major concepts are given to meanings related to research work.
2.4 Research Gap:

It has been found from the review of literature that most of the previous studies have focused on land utilization, size of farmers, inputs use, crop diversification, productivity, market behaviour of agricultural commodity, export of agricultural commodities and problems in horticultural crops. These studies have also tried to establish linkages between land utilization and productivity, size of farmers and production, inputs use and productivity, market arrivals and price behaviour, technological factors and crops diversification. However, these serial linkages of land utilization, land diversion for horticulture land utilized for vegetables within the horticultural crops, inputs use efficiency, cost of vegetable production, revenue to the vegetable grower, productivity, problems of farmers, marketing of vegetable crops and perception of farmers have not been systematically studied by the previous studies and has not analyzed the trends and composition of land utilization, particularly for horticultural crops and not made a comparative analysis. The present study has been examined the market behaviour of selected vegetable crops in five vegetable markets of India. The study also examined the comparative cost advantages and productivity advantages of different vegetable crops. The present study also discussed the perception and problems of farmers particularly related to marketing of vegetable crops. Hence, there has been a valid justification to carry out the present research work. Hence, adequate research has been done in order to understand the feature, problems, and prospects, potential along with production, productivity and marketability of horticultural crops. Given the background of the present study has been focused on the issues related to production, productivity and marketability of horticulture in general and selected vegetables in particular, with special reference to Karnataka.
2.5 References:


