Chapter - IX
Summary, Findings, Hypotheses Testing and Conclusion

This chapter presents the summary, findings, conclusion and suggestions of the present study.

9.1 Summary

There are several channels of marketing vegetables and fruits in towns and cities, varying from direct marketing from producer to consumer, to having intermediaries such as village traders, processors, commission agents, wholesalers and retailers. In the process of marketing the commodities, the producer tries to obtain maximum share in the consumer’s price. However, the profit earned by the producer depends on the marketing channel, prevailing price of the commodity and the quantity of marketable surplus available with the producer. Thus there is need to study the efficiency of each of the marketing channels and the factors that influence in selection of the market. The present study contemplates to study the area, production and yield of vegetables and fruits at national and state level, to study the arrivals and prices of vegetables and fruits at raithara santhe and alternative marketing systems, to identify the determinants of marketable surplus, to study the price spread of vegetables and fruits at raithra santhe and alternative marketing systems, and marketing constraints faced by the farmers in raithara santhe.

Summary of the analysis of the objectives have been discussed as follows.

9.2 Major Findings of the Study

Growth of Fruits and Vegetables at All-India and Karnataka State Levels

The compound growth rates of fruits area, production and productivity in India for the period 1991-92 to 2000-01 was shown positive 3.10, 4.30 and 1.20 percent respectively. During 2001-02 to 2010-11, the growth rate of area was 5.80 percent and the production growth rate was 6.70 percent. The productivity growth was 0.80 percent. For whole study period 1991-92 to 2012-13 the growth rates of area and production showed positive of 4.3 percent. The growth of productivity also showed positive at rate 0.0005 percent.
The results of area production and productivity of vegetables in India for the period 1991-92 to 2000-01 registered a positive growth of 2.10, 5.10 and 3 percent respectively. For the period 2001-02 to 2010-11 also the area, production and productivity recorded positive growths of 4.01, 6.30 and 2.30 percent respectively. During the whole study period (1991-92 to 2012-13) the growth rate of area, production and productivity showed positive rates of 2.9, 4.6 and 1.7 percent respectively.

As far as Karnataka state is concerned the growth rates of area and production of fruits for the period 1991-92 to 2000-01 exhibited a positive growth of 5.10 and 4.20 percent respectively. But the growth rate of productivity was negative of -0.90 percent. For the second period 2001-02 to 2010-11, the growth rates of area, production and productivity were 4.80, 5 and 0.30 percent respectively. During the whole study period (1991-92 to 2012-13) the compound growth rates of area and production were shown positive rates of 1.80 and 0.90 percent respectively. But productivity recorded negative rate of -0.90 percent during the same period.

In the case of vegetables the growth rates of area, production and productivity showed positive of 1.90, 2.50 and 0, 70 respectively for the period 1991-92 to 2000-01. During the period 2001-02 to 2010-11 the growth of area and production exhibited positive rates of 5.10 and 4.20 percent respectively. But for productivity growth rate is negative -0.90 percent. For the whole period (1991-92 to 2012-13) the growth rates of area, production and productivity exhibited positive rates of 1.90, 2.50 and 0.70 percent respectively.

**Arrivals and Prices of Vegetables and Fruits in different Markets**

The arrivals and prices of selected fruits and vegetables have been analysed using secondary information on monthly total quantity and monthly average price for a period of 36 months. This analysis is carried out for three different types of markets namely special APMC Kalasipalya, Raithara santhe and HOPCOMS and compared.

At the aggregate, across the markets and selected fruits and vegetables, barring a few cases, by and large there is an inverse relationship between the quantity of arrivals of fruits and vegetables and prevailing market prices of these items. In HOPCOMS, the relationship has been an inverse for all six of the selected fruits and
vegetables and it is significant in five items except for Sapota. In APMC kalasipalya market, the correlation coefficient is negative except in case of papaya and lemon which is observed to be positive relationship. In Raithara Santhe, the correlation coefficients were negative and significant for vegetables i.e. beans, brinjal and tomato. It was positive and not significant in case of fruits namely papaya, sapota and lemon.

Across the markets, the arrival is highest in HOPCOMS, followed by APMC kalasipalya market and the least in Raithara Santhe. Thus we also find the relationship to be significant, more in HOPCOMS than in the other two markets.

**Patter of Arrivals and Prices of Vegetables and Fruits in Raitharsanthe**

**Beans**

The results of arrivals and prices of beans at raitharsanthe market for the period January- December 2010 exhibited that highest arrivals were observed in November (2648.80 quintals) associated with lower price Rs.16.92/kg. The least was in April 1469 quintals related with higher price of 33.69/kg. The average arrival and prices of beans were 2145.88kg and Rs. 20.77/ kg. The resulting coefficients of variations in arrivals and prices were 17.81 and 35.36 respectively to the same period. The results of coefficient of variations represent that arrivals and prices were instable during the period.

For the period January –December 2011, arrivals of beans recorded highest during the months of September (2782.69 quintals) and March (2739.38 quintals) associated with lower prices of (16.31/kg) and (14.81/kg respectively. The lowest arrivals registered in January 1906.80quintals which is inversely associated with higher price of Rs.25/kg. The average arrivals and prices of beans for the period were 2414.75 quintals and Rs.18.39/kg. The resulting co-efficient of variations in arrival and prices were 10.87 and 27.87 respectively for the period 2011. The co-efficient of variation for arrivals were found to be lower as compared to prices. This indicates that the arrivals and prices were instable over the period.

In 2012 January-December, the highest arrivals of beans were observed in August (2855.56 quintals) and September (2853.85 quintals) which were associated with lower prices of (Rs.22.19/kg) and (Rs.22.04/kg) respectively. The Highest prices
were observed during the months of June (Rs.41.92/kg), May (Rs.37.11/kg) and April (Rs.35.04/kg) due to lowest arrivals of 1511.54 quintals, 1666.67 quintals and 1489.60 quintals respectively. The annual average arrivals and prices were 2107.19 quintals and Rs.25.85/kg respectively. The results of variations in arrivals and prices of beans during 2012 were 31.84 and 23.48 respectively. The co-efficient of variation for arrivals were found to be higher than the prices. This shows that arrivals and prices of beans were instable during the period.

For the whole study period (2010-12) the highest average annual arrivals of beans was in 2011 (2414.75 quintals) and the lowest was in 2012 (2107.19 quintals). In the case of price of beans, the highest and the lowest annual average price were reported to be (Rs.25.85/ kg) and (Rs.18.38/ kg) in 2012 and 2011 respectively.

Seasonal Indices of monthly arrivals and prices of beans at raithrasanthe for the whole study period (January 2010- December 2012) reveals that arrivals reached peak during the months of September, November and July. The months of high arrivals incidence were obviously associated with the low prices in the market under study. Similarly, the incidence of lower arrivals was associated with the high prices in the market. This clearly indicates that the operation of law of demand in the market, attributing to seasonality of perishable commodities.

The coefficient of variations in arrivals of beans was found to be highest (31.84%) during the year 2012 and lowest variation in arrivals was in 2011 (10.87%). Similarly, in the case of price, the coefficient of variations was found to be higher in 2010 (35.36%) and lowest in 2012 (23.48%). This clearly shows that the variations in arrivals as well as prices over the years were relatively higher, due to prevailing seasonality in the market.

**Brinjal**

During the period January-December 2010, the arrivals of brinjal to raithrasanthe reached maximum quantity in the month of September (1077.69 quintals) which was associated with lower price of Rs.10.69/kg. The lowest arrivals were observed in the month of May (572 quintals). The price of brinjal reached highest in the month of December Rs.23.70/kg due to seasonal demand for brinjal by the consumers. The average arrival and price of brinjal for the year 2010 was 759.55
quintals and Rs.15.56/kg respectively. The resulting co-efficient of variations in arrival and prices were 20.94% and 24.37% respectively for the year 2010. The co-efficient of variation for arrivals were found to be little lower than the prices. This indicates that the arrivals and prices were less stable over the period.

In January-December 2011 the average monthly arrivals of brinjal noticed highest in the month of January (834.80 quintals) associated with higher price of Rs.15.28/kg due to seasonal demand by the consumers. The arrival observed low in the month of June 519.23 quintals associated with the price of Rs.12.65/kg. The price recorded lowest in the month of December Rs.11.64/kg due to higher arrivals of brinjal (657.14 quintals) The average annual arrival and prices of brinjal were 638.57 quintals and Rs.13.16/kg respectively. The results of coefficient of variations of arrivals and prices were 14.55% and 8.56% respectively. This shows that arrivals and prices are instable in the Raitharasanthan, yelahanka market.

For the period January-December 2012 the average monthly arrivals recorded highest in the month of December 686.92 quintals associated with higher price of Rs.16.46/kg. The lowest price registered in the month of October Rs.11.85/kg due to more supply of brinjal 817.69 quintals. The annual average arrivals and prices were counted to 660.34 quintals and Rs.16.30/kg respectively. The calculated co-efficient of variation for arrivals and prices were 9.97% and 18.64% respectively for the period 2012. The co-efficient of variation for prices were found to be higher as compared to market arrivals. This represents that arrivals and prices were more volatile during the period.

For the study period (2010-12), the highest average annual arrivals of brinjal was in 2010(759.55 quintals) and the lowest was in 2011 (638.57 quintals). Likewise, in the case of price of brinjal, the highest and the lowest annual average price were reported to be in 2012(Rs.16.39/kg) and (Rs.13.16/kg) in 2011.

Seasonal indices of monthly arrivals and prices of Binjal at Raithara Santhe, Yelahanka (Jan 2010 - Dec 2012) represents that arrivals were highest during the months of October, September, January and February. The lowest arrivals were noticed in the months of June and May. The period of more arrivals associated with the low prices in the market and the period of less arrival related with high prices in
the market. This clearly indicates that there is inverse relationship between price and quantity supplied of a commodity in the market.

The coefficient of variations in arrivals of brinjal was found to be highest (20.94%) during the year 2010 and lowest variation in arrivals was in 2012 (9.97%). Similarly, in the case of price, the coefficient of variations was found to be higher in 2010 (24.37%) and low in 2011 (8.56%). This clearly indicates that the variations in arrivals as well as prices over the years were relatively higher, due to prevailing seasonality in the market.

**Tomato**

The results of average monthly arrivals and prices of tomato for the period January-December 2010 reveals that arrivals reached peak in the month of November (18299.20 quintals) linked with low price (Rs.8.08/kg). The least arrival was in the month of July 8750.54 quintals associated with higher price of Rs.19.26/kg. The annual average of arrivals of tomato to raithrasanthe stood at 13215.38 and price were Rs.13.89/kg. The co-efficient of variation for arrivals were found to be lower 22.36 percent in the market for the period compared to market prices 31.15 percent. This represents that the arrivals and prices were instable during the period.

In January-December 2011, the average monthly arrivals of tomato registered highest in the month of December (15985.71 quintals) associated with the price of Rs.8.71/kg. The least (6942.31 quintals) arrival recorded in the month of September with a price of Rs.13.31/kg. The price reached high Rs.23.52/kg in the month of January with an arrival of 13498 quintals. The direct relationship between arrivals and prices due to seasonal demand for tomato by the consumers. The annual average arrivals and prices of tomato were 13218.13 quintals and Rs.11.53/kg. The result of coefficient of variation in arrivals 21.24 percent and prices 53.68 percent proves that greater instability between arrivals and prices of tomato for the period due to seasonal fluctuations.

The analysis of average monthly arrivals and prices of tomato for the period January-December 2012 at Raitharasanthe reveals that the average arrivals noticed highest (14077.78 quintals) in the month of August associated with price (Rs.12/kg). The average arrivals were least (10396.30 quintals) during the month of May linked
with higher price Rs.19.33/kg. The annual average arrivals and prices were computed at 12417.39 quintals and Rs.15.19/kg. The estimated co-efficient of variations in arrivals and prices of tomato were 11.10% and 34.40% respectively. This indicates that higher instability in arrivals and prices for the period due to seasonality factors.

For the study period 2010-12, the highest and lowest average annual arrivals of tomato recorded to be in 2011 (13218.23 quintals) and in 2012 (12417.39 quintals) respectively. In the case of average annual prices of tomato highest annual price is reported in 2010 (Rs.22.36/kg) and lowest in 2012(Rs.11.10).

Seasonal Indices of monthly arrivals and prices of Tomato at Raithara Santhe, Yelahanka (Jan 2010- Dec 2012) represents that the arrivals were at their peak during November, December, February and January. The lowest arrivals were in the months of September, October and May. The periods of more arrivals incidence were obviously associated with the low prices in the market under study and vice versa.

The coefficient of variations in arrivals of tomato was found to be highest (22.36%) during the year 2010 as compared to 2011 and 2012. The lowest variation in arrivals was in 2012 (11.10%). Similarly, in the case of price, the coefficient of variations was found to be higher in 2011 (53.68%) as compared to 2012 (34.40%) and 2011 (31.15%). This clearly shows that the variations in arrivals as well as prices over the years were relatively higher, due to prevailing seasonality in the market.

**Papaya**

The analysis of average monthly arrivals and prices of papaya at raitharasanthe for the period January-december 2010 represents that highest arrivals of papaya recorded in the months of july (581.48quintals) and January (562.22 quintals) associated with prices of Rs.12.52/kg and Rs.8.41/kg respectively. The least (392.31 quintals) arrivals are observed in the month of august which is associated with higher price of Rs.13.88/kg. The annual average arrivals and prices of papaya for the period 2010 were 504.04 and 10.83 respectively. The resulting co-efficient of variation in arrivals and prices were 11.63% and 16.45% respectively for the period 2010. The co-efficient of variation for arrivals were found to be lower in the market for overall period compared to market prices. This shows that arrivals and prices were instable during the period.
The average monthly arrivals and prices of papaya in Raitharasanthe, yelahanka market, for the period January-December 2011 indicates that the highest (985.60 quintals) arrivals of papaya were noticed in the month of February followed by (840 quintals) in August. The highest price is observed in the month of August Rs.18/kg. The least (538.08 quintals) arrival is observed in the month of June associated with least price of Rs.7.96/kg. This shows the positive relationship between arrivals and prices. The least price (Rs. 7.25/kg) were observed in the months of December followed by (Rs.7.96/kg) in June. The reason for the lowest price in the month of December attributed to the highest arrivals of papaya during the month. This represents the inverse relationship between arrivals and price. The annual average arrival and price of papaya for the year 2011 were 709.13 quintals and Rs.10.06/kg respectively. The results of co-efficient of variations for arrivals and prices were 19.66% and 21.99% respectively for the period 2011. The co-efficient of variation for arrivals were found to be little lower in the market for the period compared to market prices. This represents that the arrivals and prices are relatively stable in the Raitharasanthe, yelahanka market.

The results of monthly average arrivals and prices of papaya during January-December, 2012 in Yelahanka Raitharasanthe shows that highest arrival was in the month of December (731.54 quintals) which is associated with lower price Rs.14.58/kg. The least arrival was in September (532.69 quintals) related with high price of Rs.18.48/kg. The annual average arrival and price of papaya were 639.47 quintals and Rs.11.37/kg respectively. The resulting co-efficient of variations in arrival and prices were 10.88 % and 40.09%respectively. The co-efficient of variation for arrivals were found to be much lower in the market for overall period compared to market prices. This shows that the arrivals and prices are instable in the market.

For the whole study period 2010-2012, the annual average arrivals of papaya observed highest in 2011 (709.13 quintals) and lowest in 2010 (504.04 quintals). Similarly, in the case of annual average price of papaya, highest price is recorded in 2012 (Rs.11.37/kg) and lowest in 2011(Rs.10.06/kg).

Seasonal Indices of monthly arrivals and prices of Papaya data reveals that arrivals of papaya were highest in February (132.24) followed by March (120.30), April (111.23) and December (106.09). The seasonal indices for arrivals was the
lowest in the month of August (80.82) followed by June (82.41) and October (88.06). The seasonal indices for prices indicate that the price variation of papaya was highest in August (143.17) followed by September (117.99) and October (113.21). The seasonal price of papaya was the lowest in the month of December (78.83) followed by May (78.86) and June (81.62). The months of high arrivals incidence were obviously associated with the low prices in the market under study. Similarly, the incidence of lower arrivals was associated with the high prices in the market. This clearly indicates that the operation of law of demand in the market, attributing to seasonality of perishable commodities.

The coefficient of variations in arrivals of papaya was found to be highest (19.66%) during the year 2011 and lowest in 2012 (10.88%). Similarly, in the case of price, the coefficient of variations was found to be highest in 2012 (40.09%) and low in 2010 (16.45%). This clearly shows that the variations in arrivals as well as prices over the years were relatively higher, due to prevailing seasonality in the market.

**Sapota**

The analysis of average monthly arrivals and prices of sapota during January-December 2010 indicates that the arrivals of sapota were highest (498.40 quintals) in the month of November associated with price of Rs.17/kg. Similarly the arrivals registered low in the month of 298.77 quintals which is associated with higher price of Rs.18.65/kg. This represents the inverse relationship between arrivals and prices. The annual average arrival and price of sapota for the period 2010 were 349.50 quintals and Rs.19.48/kg respectively. The co-efficient of variation in arrivals and prices of sapota were found to be 15.94% and 15.45 respectively for the period 2010. This clearly shows that the variations in arrivals as well as prices over the year were more stable.

During the period 2011, the highest (612.80 quintals) arrival was recorded in the month of February which is associated with a price of Rs.31.76/kg. The lowest prices were observed in the months of May (Rs.16.46/kg) and December (Rs.18.64/kg). The reason for prevailing least price during these months was due to more arrivals. The average monthly arrival and price of sapota for the year 2011 were 41.62 quintals and Rs.24.99/kg respectively. The resulting co-efficient of variations
in arrivals and prices were 27.99% and 22.67% respectively. This shows that arrivals and prices were unstable in the Raitharsanthe, yelahanka market.

In 2012 the highest arrival was in the month of October (524.96 quintals); and the least was in December (379.23 quintals). With regard to price of sapota, the higher prices were reported in the months of August (Rs. 31.41/ kg) and December (Rs 29.50/ kg). The reason for the highest price in the month of December attributed to the lowest arrivals of sapota during the month. But in August it is observed that Price of sapota increased (Rs,31.46) with increase of arrivals (495.56 quintals). The annual average arrival and price of sapota during 2012 were 458.06 quintals and Rs.22.22/ kg respectively. The resulting co-efficient of variations in arrival was 10.75 percent and in price it was 22.86 percent. This shows that the arrivals and prices were unstable during the period.

For the whole study period (2010-12), the highest average annual arrivals of sapota was in 2012 (458.06 quintals) and the lowest was in 2010 (349.50 quintals). Likewise, in the case of price of sapota, the highest and the lowest annual average price were reported to be (Rs.24.99/ kg) and (Rs.19.48/ kg) in 2011 and 2010 respectively.

Seasonal Indices of monthly arrivals and prices of Sapota for the period 2010-12, reveals arrivals of sapota were at their peak during February (122.21), March (120.25), May (112.29) and January (108.62). The lowest arrivals were observed in the months of October (79.16), August (82.95) and July (84.78). The months of low arrivals incidence were obviously associated with the high prices in the market under study. The incidence of higher arrivals was associated with the low prices in the market. February, March and April were exceptions to this. This clearly indicates that the operation of law of demand in the market, attributing to seasonality of perishable commodities.

The coefficient of variations in arrivals of sapota was found to be highest (27.99%) during the year 2011 as compared to 2010 and 2012. In the case of price, the coefficient of variations was found to be higher in 2012 (22.86%) as compared to 2011 (27.99%) and 2010(15.94%). This clearly shows that the variations in arrivals as well as prices over the years were relatively higher, due to prevailing seasonality in the market.
Lemon

The results of average monthly arrivals and prices of lemon during January-December 2010 in Yelahanka Raitharasanth shows that highest arrivals of lemon in the month of July 772.22 quintals, related with low price of Rs.32.15/kg. The highest price was observed in the month of September Rs.54.46/kg due to lower arrivals of 422.31 quintals. The annual average arrivals and price of lemon were 512.74 quintals and Rs.42.63/kg respectively. The resulting co-efficient of variations in arrival and prices were 21.22% and 18.72% respectively for the period 2010. This shows that the arrivals and prices were instable in the market.

During 2011, the arrivals were recorded highest in the month April 701.92 quintals with a price of Rs.85.62/kg. The lowest arrivals were in the month of October 420 quintals with a price of Rs.53.21/kg. During these two months we find direct relationship between arrivals and price. In remaining months we find inverse relationship between arrivals and prices of lemon. The annual average arrival and price of lemon for the period 2011 were 590.17 quintals and Rs.49.02/kg respectively. The result of coefficient of variation shows that 14.45% variation in arrivals and 42.09% variations in price for the period 2011. The co-efficient of variation for arrivals were found to be much lower in the market for overall period compared to market prices. This represents prevalence of higher instability in arrivals and prices.

The result of 2012 represents that high arrivals in the month of March 979.63 quintals which is associated with low price Rs.47.48/kg. The low arrivals in the month of November 585.88 quintals resulted in high price of Rs.56.27/kg. The relationship between average arrivals and prices for the year 2012 was inverse. Average annual arrival and price of lemon were 784.24 quintals and Rs.64.53/kg respectively. The results of co-efficient of variation for arrivals and prices of lemon were 15.25% and 21.57% respectively for the period 2012. This indicates that arrivals and prices of lemon were instable in the market.

For the study period 2010 –2012, the highest annual average arrival was observed in 2012 (784.24 quintals) and lowest arrival in 2010 (512.74 quintals). Similarly, in the case of price highest annual average price prevailed in 2012 (Rs.64.53/kg) and lowest in 2010 (Rs.42.63 /kg).
Seasonal Indices of monthly arrivals and prices of Lemon reveals that arrivals were highest in July (124.03) followed by April (112.49), March (110.63) and January (109.44). The lowest arrivals in the month of October (66.75) followed by September (73.07), December (91.19) and August (94.15).

The seasonal indices for prices indicate that highest price was in the month of May (146.88) followed by April (140.44), June (123.50) and September (110.33). The lowest price was observed in the month of July (65.97) followed by January (70.87), December (72.62) and August (74.26). Except in March, April and December we can notice the inverse relationship between arrivals and prices of lemon in the market. In March and April there was rise in price with increase in arrivals of lemon due to better demand conditions in the market. In December lower demand for lemon resulted in prevailing of low price in the market.

The coefficient of variations in arrivals of lemon was found to be highest (21.22%) during the year 2010 and lowest in 2011 (14.45%). In the case of price, the coefficient of variations was found to be higher in 2011 (42.09%) as compared to 2012 (21.57%) and 2010 (18.72%). This clearly shows that the variations in arrivals as well as prices over the years were relatively higher, due to prevailing seasonality in the market.

The study shows that the hypothesis of an inverse relationship between arrivals and price of vegetables and fruits in raitharsanthe is true.

**Determinants of Marketable Surplus**

**Beans**

It is observed from socio economic profile of sample respondents marketing beans at raitharsanthe that 40% of the respondents are in the age group of 41 to 50 years and had high school education. 58.33% of the respondents are having 4 to 8 members in the family. 51.7% of the farmers were having 2.5 to 5 acres of land. 80% of the sample respondents were using bore well as the irrigation source for cultivating beans. The large number of respondent farmers belongs to general category (53.3%) that is followed by backward caste (35%). Significant proportion of the respondents (56.7%) brought beans more for marketing in the summer season. 43.3% of the
respondent farmers are selling their produce thrice a week. 76.6% of the respondents got information regarding raithrasanthe from panchayath.

Mini truck are found to be the most commonly used mode of transport for bringing beans to the raithrasanthe (68.3%). 53.3% of the respondent farmers are bringing their produce within a range of 20 to 40 kilometers. 76.7% of the respondents are bringing their produce early in the morning for marketing at raithrasanthe.

 Marketable surplus of beans was 95.32 percent of total production and farm level retention accounts 4.58 percent. Payment in kind to labor (1.81 %) is the most important factor influencing the marketable surplus of beans. Field loss accounts for 1.12% of the total quantity. Religious payment constitutes 0.25% of the total produce stands least in determining the marketable surplus of beans. Marketed surplus of beans was 91.74 percent which is derived by deducting total loss (3.58%) from marketable surplus. Wholesale loss accounts 2.71% and transport loss was 0.87 percent in the total loss.

Among five factors considered in linear regression model the variables farm size and family size were found to be important factors influencing on marketable surplus of beans. These two factors are observed to be statistically significant.

Brinjal

The analysis of socio economic profile of the sample respondents marketing brinjal at raithrasan shows that among the respondents 61.7 percent of the respondents (37) are in the age group of 41-50 years. Nearly 50 percent (30) of the respondents are having high school education. 46.7 percent (28) of the sample respondents are having 4-8 members in their family. 55 percent of the respondents are having 2.5-5 acres of land. 71.7 percent (43) of the respondents are having bore well as the main source of irrigation. Majority of the respondents accounting for 63.3 percent belonged to general category. 66.6 percent of the respondents (40) were bringing of brinjal for marketing in khariff season. 53.3 percent of the respondents sold their produce thrice a week. 85 percent of the respondents got information regarding raithrasanthe from grama panchayath office. Mini truck is to be the most commonly used mode of transport for bringing produce to the raithrasanthe (55%).
Nearly 53.4 percent (32) respondent farmers are bringing the produce from a distance of 20-40 kilometers. 63.3 percent of the respondents (38) were bringing their produce early in the morning.

Marketables surplus of Brinjal was 95.42 percent and the farm level retention was 4.58 in the total produce. Payments in kind to labour (1.94%) and field loss (0.96%) were the factors influencing surplus available for sale. Marketed surplus of brinjal was 91.15 percent. Wholesale loss of 3.37 percent is the most important factor determining the marketed surplus.

The results of linear regression model on brinjal indicates that among five factors considered in this model, the variables farm size and family size were found to be important factors influencing on marketable surplus of brinjal and were statistically highly significant.

**Tomato**

The analysis of socio economic characteristics of the sample respondents marketing tomato at raitharasanche at Bangalore reveals that 45 percent of the respondents (27) are in the age group of 41-50 years. 43.3 percent of the respondents (26) have completed high school education. 50 percent of the respondents (30) are having 4-8 members in the family. 48.3 percent of the respondents had medium land holdings 2.5 – 5 acres. 71.7 percent of the respondents are depending upon bore well as the main source of irrigation. 46.6 percent of the respondents belonged to other backward community.

Nearly 48.3 percent of the sample respondents were bringing tomato for marketing during the rabi season. 45 percent of the respondents (27) are participating regularly during the cropping period. 66.7 percent of the respondents got information regarding raitharasanche from the village panchayath.

Nearly 56.7 percent of the respondents (34) were using mini truck for transporting the produce. 56.7 percent of the sample respondents (34) were bringing their produce from a distance of 20-40 kilometers. 73.3 percent of the respondents (44) were bringing their produce early in the morning.

In the total production farm level retention constitutes 4.41 percent and this left a marketable surplus of tomato 95.59 percent. Two important factors influencing
marketable surplus of tomato are payment in kind to labour (2.74%) and field loss (0.74%). Marketed surplus of tomato was which 90.11 percent is in the total produce. In the total loss of produce wholesale loss (4.71%) the major factor in determining the marketable surplus.

The results of linear regression model on tomato indicates that among five factors considered in this model three factors namely farm size, distance and education have found to substantially influence the marketable surplus of tomato produce.

**Papaya**

The analysis of socio economic characteristics of the sample respondents marketing papaya at raitharsanthe yelahanka, Bangalore represents that among the respondents 42.5 percent of the respondents (17) are in the age group of 41-50 years. Nearly 42.5 percent (17) of the respondents are having primary school education. 45 percent (18) of the respondents are having 4-8 members in their family. Nearly 47.5 percent of the respondents (19) are own 2.5-5 acres of land, they belonged to small farmer’s category. 62.5 percent (25) of the respondents are having bore well as the main source of irrigation. Majority of the respondents 62.5 percent belonged to general category. 70 percent of the respondents (28) were bringing more of papaya for marketing in kharif season. 40 percent of the respondents (16) are participating in marketing daily during the cropping period. 65 percent of the respondents got the information regarding raitharasanthe from the gram panchayath office. 60 percent of the sample respondents were using mini truck as the mode of transport for bringing the produce to the raithrasanthe. 52.5 percent of the respondents (21) are bringing their produce within a range of 40-60 kilometers. 77.5 percent of the sample respondents (31) were bringing the produce in the evening hours.

Marketable surplus of papaya was 92.58 percent of the total produce. Farm level retention accounts 7.42 percent. Payment in kind to labour (2.25%), field loss (1.96%) and gift to relatives (1.30%) family consumption (1.25%) were the major factors determining the marketable surplus of papaya. Marketed surplus of papaya accounts 90.76 percent. Wholesale loss of 0.99 percent is the major factor which determines the marketed surplus.
Among five factors considered in linear regression model only family size is observed to have a significant influence on creation of marketable surplus of papaya.

**Sapota**

The analysis of socio economic characteristics of the sample respondents marketing sapota at raitharsanthe yelahanka Bangalore observed that 42.5 percent of the respondents (17) are in the age group of 31-40 years. 40 percent of the sample respondents (16) have completed primary school education. Nearly 40 percent of the respondents (16) have a family consisting of four to eight members. 52.5 percent of the sample respondents (21) are having 2.5 to 5 acres of land. 70 percent of the sample respondents are depending upon bore well as source of irrigation. 55 percent belongs to general community. Nearly 62.5 percent of the respondents are bringing sapota to market in rabi season. 42.5 percent of the sample respondents (17) were participating twice a week in marketing.

Majority of the respondents i.e. 82.5 percent got information from the panchayaths. Majority of the sample respondents i.e., 60 percent were bringing their produce by auto rickshaw. 57.5 percent of the sample respondents (23) were bringing their produce from a distance of 20 to 40 kilometers. 75 percent were bringing their produce for marketing in evening hours.

Marketable surplus of sapota is 95.75 percent in the total produce. Field loss 1.78 percent and payment in kind to labour 1.37 percent were the important factors in determining the surplus available for sale. Marketed surplus of sappota was 93.31 percent. Loss during the sales i.e., wholesale loss 1.66% is the key factor determines the marketed surplus.

It is observed from the analysis of linear regression model that farm size and family size have significantly influenced the creation of marketable surplus of Sapota.

**Lemon**

The analysis of socio economic profile of the sample respondents marketing lemon at raitharasanthe reveal that 37.5 percent of the sample respondents (15) belong to age of below 30 years. 45 percent of the respondents (18) have completed high school level of education. Nearly 55 percent of the respondents (22) are having 4-8 members in the family. 42.5 percent of the sample respondents (17) are having 2.5 to
5 acres of land. 87.5 percent of the respondents (35) are depending upon bore well as the main source of irrigation. Majority of the respondents, 55 percent belonged to general category. Nearly 57.5 percent of the respondents (23) are bringing more of lemon to market in rabi season. 37.5 percent of the respondents (15) are participating twice a week. Majority of the respondents i.e. 65 percent got information from the panchayaths regarding raitharsanthe. 80 percent of the sample respondents were using mini truck as the mode of transport and bringing their produce from a distance of 20 to 40 kilometers. Nearly 65 percent of the sample respondents (26) were bringing their produce early in the morning.

Marketable surplus of lemon was 96.19 percent. Among the factors field loss (1.13%), gift to relatives (0.92%) and payment in kind to labour (0.67%) were the major factors determining the surplus available for sale. Marketed surplus constitutes 94.30 percent. Wholesale loss (1.13%) is the major factor in influencing the marketed surplus.

Among five factors considered in the linear regression model, farm size and price have significantly influenced the level of marketable surplus of lemon.

**Price Spread of Vegetables and Fruits**

Five channels were identified in marketing of vegetables: each in Raitharsanthe and HOPCOMS and three channels in Jayachamarajendra vegetable market i.e., APMC Kalasipalya Bangalore.

**Beans**

Channel I In this channel the producer realizes 95 percent in consumer’s price. In the total marketing cost the major cost borne by the producer was transport cost accounts 1.96 percent in the consumer’s purchase price. Index of marketing efficiency was 20 by Shepherd’s method, 19 by Acharya’s method and 1 by conventional method for one quintal.

Channel II In this channel producer’s sells to retailers and share in consumer’s price was 53.42 percent. Transport cost is the major cost in total marketing cost of the producer (1.87%). Retailer’s margin was 33.32 percent. Loss, wastage and spoilage cost (2.89%) and commission charges (2.88%) were the major expenses of retailers in
total cost of marketing. Index of marketing efficiency was 7.54 by Shepherd’s method, 1.14 by Acharya’s method and 3.51 by conventional method for one quintal.

Channel III In this channel Producer sells to wholesaler. The share of producer in consumer price was 51.58 percent. Transport cost (1.71%) was the main marketing cost of the producer. Marketing margin of wholesalers and retailers were 12 percent and 21.57 percent respectively. Wholesaler major cost of marketing was commission charges (2.86%) and retailer’s was loss, wastage and spoilage cost (3.60%). The marketing efficiency was 6.74 by Shepherd’s method, 1.06 by Acharya’s method and 3.26 by conventional method for one quintal.

Channel IV In this channel producer sells to local village trader and realizes 44.46 percent in consumer’s price. In the total expenses of marketing transport cost (1.02%) was the major one. Major marketing costs of village traders, wholesaler and retailer was transport cost (1.26%), commission charges (3.03%) and loss, wastage and spoilage cost of (3.82%) respectively. The market margins of village trader, wholesaler and retailer were 10 %, 12.89 %, and 16.42 % respectively. Index of marketing efficiency was 6.16 by Shepherd’s method, 0.80 by Acharya’s method and 3.42 by conventional method for one quintal.

Channel V In this channel producer sell to Horticultural Producer’s Co-operative Marketing Society and the share of producer in consumer price was 59.21 percent. Transport cost (2.11%) was the major marketing cost of the producer. The total marketing cost and margin of society were 7.56 percent and 29 percent respectively. Index of marketing efficiency was 8.48 by Shepherd’s method, 1.56 by Acharya’s method and 3.20 by conventional method for one quintal.

In five channels, Channel I found to be most efficient compared to other channels. Absence of intermediaries resulted in high share (95%) of consumer’s price to the producer. In channel IV producer share in consumer’s price was 44.46 percent due to the presence of long chain of intermediaries their margin and marketing costs.
**Brinjal**

Channel I In this channel the producer realizes 92.68 percent in consumer’s price. In the total marketing cost the major cost borne by the producer was transport cost accounts 3.59 percent in the consumer’s purchase price. Index of marketing efficiency was 13.67 by Shepherd’s method, 12.67 by Acharya’s method and 1 by conventional method for one quintal.

Channel II In this channel producer’s sells to retailers and share in consumer’s price was 66.99 percent. Transport cost is the major cost in total marketing cost of the producer (4.17%). Retailer’s margin was 11.16 percent. Commission charges (3.98%) were the major expenses of retailers in total cost of marketing. Index of marketing efficiency was 4.57 by Shepherd’s method, 2.02 by Acharya’s method and 1.51 by conventional method for one quintal.

Channel III In this channel Producer sells to wholesaler. The share of producer in consumer price was 60.03 percent. Transport cost (4.09%) was the main marketing cost of the producer. Marketing margin of wholesalers and retailers were 7.19 percent and 9.36 percent respectively. Wholesaler major cost of marketing was commission charges (3.51%) and retailer’s was loss, wastage and spoilage cost (4.09%). Index of marketing efficiency was 4.27 by Shepherd’s method, 1.50 by Acharya’s method and 1.70 by conventional method for one quintal.

Channel IV In this channel producer sells to local village trader and realizes 46.94 percent in consumer’s price. In the total expenses of marketing, transport cost (1.99%) was the major one. Major marketing costs of village traders, wholesaler and retailer was transport cost (3.67%), commission charges (3.28%) and loss, wastage and spoilage cost of (4.07%) respectively. The market margins of village trader, wholesaler and retailer were 5.95%, 10.66%, and 9.67% respectively. Index of marketing efficiency was 3.73 by Shepherd’s method, 0.88 by Acharya’s method and 1.98 by conventional method for one quintal.

Channel V In this channel producer sell to Horticultural Producer’s Co-operative Marketing Society and the share of producer in consumer price was 60.76 percent. Transport cost (3.84%) was the major marketing cost of the producer. The total marketing cost and margin of society was 8.71 percent and 23.07 respectively.
Index of marketing efficiency was 6.19 by Shepherd’s method, 1.54 by Acharya’s method and 2.42 by conventional method for one quintal.

Among five channels, Channel I was found to be most efficient where producer share in consumer’s price was highest 92.68 percent and low in channel IV 46.94 percent.

**Tomato**

Channel I In this channel the producer realizes 91.76 percent in consumer’s price. In the total marketing cost the major cost borne by the producer was transport cost accounts 3.67 percent in the consumer’s purchase price. The marketing efficiency was 12.14 by Shepherd’s method, 11.14 by Acharya’s method and 1 by conventional method for one quintal.

Channel II In this channel producer’s sells to retailers and share in consumer’s price was 55.61 percent. Transport cost is the major cost in total marketing cost of the producer (3.62%). Retailer’s margin was 26.25 percent. Loss, wastage and spoilage cost (3.39%) and transport cost (3.16%) were the major expenses of retailers in total cost of marketing. Index of marketing efficiency was 5.51 by Shepherd’s method, 1.25 by Acharya’s method and 2.44 by conventional method for one quintal.

Channel III In this channel Producer sells to wholesaler. The share of producer in consumer price was 49.88 percent. Transport cost (3.35%) was the main marketing cost of the producer. Marketing margin of wholesalers and retailers were 10.08 percent and 19.79 percent respectively. Wholesaler major cost of marketing was commission charges (2.86%) and retailer’s was loss, wastage and spoilage cost (3.64%). Index of marketing efficiency was 4.99 by Shepherd’s method, 0.99 by Acharya’s method and 2.47 by conventional method for one quintal.

Channel IV In this channel producer sells to local village trader and realizes 39.04 percent in consumer’s price. In the total expenses of marketing transport cost (1.89%) was the major one. Major marketing costs of village traders, wholesaler and retailer was transport cost (3.55%), commission charges (2.98%) and loss, wastage and spoilage cost of (3.94%) respectively. The market margins of village trader, wholesaler and retailer were 9.49%, 13.04%, and 14.70% respectively. Index of
marketing efficiency was 4.21 by Shepherd’s method, 0.64 by Acharya’s method and 2.57 by conventional method for one quintal.

Channel V In this channel producer sell to Horticultural Producer’s Co-operative Marketing Society and the share of producer in consumer price was 62.12 percent. Transport cost (3.92%) was the major marketing cost of the producer. The total marketing cost and margin of society was 9.67 percent and 21.15 respectively. Index of marketing efficiency was 5.97 by Shepherd’s method, 1.63 by Acharya’s method and 2.26 by conventional method for one quintal.

It is clear from the above results that the price spread was higher in lengthy channel, i.e., channel IV involving village trader, wholesaler, and retailers and lesser in shorter channel, channel I Producer and consumer. Channel I helped the producers to market directly to the consumers and realize shares of 91.77 percent of the consumer rupee. In the case of lengthy channels IV producer’s share in consumer’s price was 39.04 percent.

**Papaya**

Four channels were identified for analyzing the price spread of papaya. Each in raithara santhe market, HOPCOMS and two channels in APMC Hoskur fruit market, Bangalore.

Channel I: Producer – Consumer (Raitharasanthe market)
Channel II: Producer – wholesaler – retailer – consumer (APMC Hoskur market)
Channel III: Producer – village trader -- wholesaler – retailer – consumer
Channel IV: Producer – Procurement centre – Retail outlets --- consumer

Channel I: In this channel the producer realizes 87.5 percent in consumer’s price. In the total marketing cost the major cost borne by the producer was transport cost accounts 5.17 percent in the consumer’s purchase price. Index of marketing efficiency was 8 by Shepherd’s method, 7 by Acharya’s method and 1 by conventional method for one quintal.

Channel II: In this channel Producer sells to wholesaler. The share of producer in consumer price was 32.53 percent. Transport cost (4.51%) and loading, unloading, wastage (2.11%) was the major marketing cost of the producer. Marketing
margin of wholesalers and retailers were 12.05 percent and 30.12 percent respectively. Wholesaler major cost of marketing was commission charges (2.11%) and retailer’s was transport cost (4.81%). The marketing efficiency was 3.95 by Shepherd’s method, 0.48 by Acharya’s method and 2.66 by conventional method for one quintal.

Channel III: In this channel producer sells to local village trader and realizes 23.56 percent in consumer’s price. In the total expenses of marketing transport cost (2.40%) was the major one. Major marketing costs of village traders, wholesaler and retailer was transport cost (2.89%), commission charges (2.41%) and transport cost of (3.61%) respectively. The market margins of village trader, wholesaler and retailer were 12.02%, 14.43%, and 24.05% respectively. Index of marketing efficiency was 3.85 by Shepherd’s method, 0.30 by Acharya’s method and 2.94 by conventional method for one quintal.

Channel IV: In this channel producer sell to Horticultural Producer’s Co-operative Marketing Society and the share of producer in consumer price was 44.44 percent. Transport cost (4.16%) was the major marketing cost of the producer. The total marketing cost and margin of society was 14.45 percent and 32.22 percent respectively. Index of marketing efficiency was 4.28 by Shepherd’s method, 0.80 by Acharya’s method and 2.39 by conventional method for one quintal.

Among four channels, channel I found to be efficient compared to other channels. In channel I producer realizes highest share (87.5%) in consumer’s price. Whereas in the channel IV, the share of producer in consumer’s price was very low (23.56%) due to high marketing cost and margins of intermediaries.

**Sapota**

To analyze the price spread of sappota four channels were identified. Two channels in APMC, Hoskur market and each in Raitharasanthe Market and HOPCOMS

Channel I: In this channel the producer realizes 94.16 percent in consumer’s price. In the total marketing cost the major cost (5.84%) borne by the producer was transport cost accounts 2.50 percent in the consumer’s purchase price. Index of
marketing efficiency was 17.14 by Shepherd’s method, 16.14 by Acharya’s method and 1 by conventional method for one quintal.

Channel II: In this channel producer sells to retailer. The share of producer in consumer price was 49.75 percent. Transport cost (2.78%) was the major marketing cost of the producer. Marketing margin retailers was 33.34 percent. Retailer major cost of marketing was loss, wastage, and spoilage cost (3.13%) and commission charges (2.78%). The marketing efficiency was 5.91 by Shepherd’s method, 0.99 by Acharya’s method and 2.97 by conventional method for one quintal.

Channel III: In this channel producer sells to pre harvest contractor cum wholesaler and realizes 39.54 percent in consumer’s price. Marketing costs of producer is absence in this channel. Major marketing costs of pre harvest contractor and retailer was transport cost (2.18%) and commission charges (2.83%) respectively. The market margins of pre harvest contractor cum wholesaler and retailer were 11.34 percent and 33.32 percent respectively. Index of marketing efficiency was 6.32 by Shepherd’s method, 0.65 by Acharya’s method and 3.82 by conventional method for one quintal.

Channel IV: In this channel producer sell to Horticultural Producer’s Co-operative Marketing Society and the share of producer in consumer price was 67.78 percent. Transport cost (2.65%) was the major marketing cost of the producer. The total marketing cost and margin of society was 7.48 percent and 19.09 percent respectively. Index of marketing efficiency was 7.62 by Shepherd’s method, 2.10 by Acharya’s method and 2.45 by conventional method for one quintal.

Among four channels channel I is consider to be most efficient one compare to other channels. Producer’s share in consumer’s price was high in channel I 94.16 percent. It was low 39.54 percent in channel III due to more number of intermediaries.

**Lemon**

Four channels were identified to assess the price spread, marketing cost and margin. Each in Raitharasanth Market and HOPCOMS. Two channels in APMC Kalasipalya Bangalore.
Channel I: In this channel the producer realizes 96.54 percent in consumer’s price. In the total marketing cost the major cost (1.05%) borne by the producer was transport cost accounts 2.50 percent in the consumer’s purchase price. Index of marketing efficiency was 28.8 by Shepherd’s method, 27.8 by Acharya’s method and 1 by conventional method for one quintal.

Channel II: In this channel Producer sells to wholesaler. The share of producer in consumer price was 72.04 percent. Transport cost (1.13%) was the major marketing cost of the producer. Marketing margin of wholesalers and retailers were 4.88 percent and 8.14 percent respectively. Wholesaler major cost of marketing was commission charges (3.74%) and retailer’s was loss, wastage, spoilage cost (4.25%). The marketing efficiency was 6.69 by Shepherd’s method, 2.57 by Acharya’s method and 1.87 by conventional method for one quintal.

Channel III: In this channel producer sells to local village trader and realizes 60.20 percent in consumer’s price. In the total expenses of marketing transport cost (0.59%) was the major one. Major marketing costs of village traders, wholesaler and retailer was transport cost (0.89%), commission charges (3.47%) and loss, wastage, spoilage cost of (4.16%) respectively. The market margins of village trader, wholesaler and retailer were 5.22 %, 8.23 %, and 11.21 % respectively. Index of marketing efficiency was 6.60 by Shepherd’s method, 1.51 by Acharya’s method and 2.62 by conventional method for one quintal.

Channel IV In this channel producer sell to Horticultural Producer’s Co-operative Marketing Society and the share of producer in consumer price was 65.82 percent. Transport cost (1.02%) was the major marketing cost of the producer. The total marketing cost and margin of society was 5.75 percent and 25.75 percent respectively. Index of marketing efficiency was 11.86 by Shepherd’s method, 1.92 by Acharya’s method and 4.05 by conventional method for one quintal.

Among four channels, in channel I where producer realizes 96.53 percent in consumer’s price due to low marketing cost. In the lengthy channel III producer, village trader, wholesaler, retailer, consumer the producer share in consumer’s price was too low 60.20 percent because of high marketing costs and margins.
The study clearly brings out the hypothesis that Farmers in the RaitharaSanthe are getting highest share of the price paid by the consumers when compared to other channels in alternative marketing system.

**Farmers Choice of Markets by the Farmers**

The objective of this chapter was to analyse process of choice of market made by farmers to sell their produce and the factors that influenced the choice of market. The analysis was carried out for all six selected commodities. Nine different factors were considered to be influencing the choice of market for six different commodities. Of these only four factors viz., age, education, family size and marketable surplus were found to be important and statistically significant across the six different commodities. Family size influenced the choice of market for tomato, papaya and sapota. Education were significantly influencing in the choice of market for beans, brinjal and sapota. The age of the farmer influenced the choice of market in case of two commodities i.e., beans and brinjal and marketable surplus in case of lemon. Among the six different commodities, the highest number of cases correctly predicted was observed to be in case of lemon only. Similarly in case of papaya, the overall result was statistically significant with very high number of correctly predicted cases with 84%.

**Constraints Faced by Farmers in Marketing Vegetables and Fruits at Raitharasanthe.**

**Beans**

The constraints faced by respondents in marketing beans were ranked and prioritized by using Garret’s ranking method. Lack of cold storage was ranked as the first major problem with a mean score of 61.30. Price fluctuations and sacrifice of farm work was ranked second and third problem with mean scores of 59.48 and 56.75 respectively. High cost of production and frequent change in the site of the farmers at raitharsanthe was ranked as fourth and fifth problems.

**Brinjal**

The major problem faced by the respondents in marketing brinjal was high cost of production and price fluctuation with mean score of 60.45 and 57.85
respectively. The other problem ranked by the farmers was high transport cost, sacrifice of farm work, lack of standardization and lack of cold storage facilities.

**Tomato**

About 60.71 percent of the sample respondents ranked price fluctuations as the major problem in marketing tomato at raitharsanthe. Sacrifice of farm work and lack of standardization was ranked second and third problem. Lack of cold storage and high cost of production were ranked next important problems.

The common problems faced by the respondents marketing vegetables at raitharsanthe was price fluctuation, lack of cold storage facility, high cost of production, sacrifice of farm work and lack of standardization of products.

**Papaya**

About 63 percent of sample respondents ranked lack of storage facility as the major problem in marketing papaya at raitharasanthe. Market far away from farm and price fluctuations were ranked second and third problem in marketing. The next problems ranked were lack of skilled labour for packing and sacrifice of farm work.

**Sappota**

Sample respondents ranked Lack of storage as the major problem in marketing sappota at raitharasanthe. Price fluctuation in the market and sacrifice of farm work was ranked as second and third problem in marketing. Market far away from farm and lack of standardization of products were ranked next major problems.

**Lemon**

Respondents expressed lack of storage facility as the major problem in marketing lemon in the market. Price fluctuations and lack of standardization was ranked as next problems. Sacrifice of farm work and markets far away from market were ranked fourth and fifth problem by the respondents.

Lack of storage facility was the severe problem faced by the fruit respondents at raithrshanthe. The other common problems were price fluctuation, lack of standardization, sacrifice of farm work and market far away from market.
9.3 Testing of Hypothesis

Hypotheses

The study has hypothesized that,

1. There is a positive growth in area, production and productivity of vegetables and fruits at national and state level.
2. There is an inverse relationship between arrivals and price of vegetables and fruits in raitharasanthe.
3. Marketable surplus of vegetables and fruits are determined by factors like education, farm size, family size, distance and price.
4. Farmers in the Raithara Santhe are getting highest share of the price paid by the consumers when compared to other alternative marketing system.

Testing of Hypothesis No 1

There is a positive growth in area, production and productivity of vegetables and fruits at national and state level.

Fruits – India level

$H_0 =$ There is no positive growth in area, production and productivity of fruits in India

$H_1 =$ There is a positive growth in area, production and productivity of fruits in India

It can be observed from the table 4.1 that the compound growth rate of area (4.3) and production (4.3) of fruits in India are positive and statistically significant at one percent level which is observed by the high value of ‘t’ statistics. It implies that there has been a positive growth in area, production of fruits in India. Whereas in case of compound growth rate of productivity of fruits is insignificant with a value of 0.00005 which is close to zero. Therefore, alternative hypothesis ($H_1$) is accepted in case of area and production of fruits and concluded that area and production of fruits has a positive growth in India and not in productivity.

Vegetables – India level

Hypothesis

$H_0 =$ There is no positive growth in area, production and productivity of vegetables in India

$H_1 =$ There is a positive growth in area, production and productivity of vegetables in India
It is observed from the table 4.3 that compound growth rate of area (2.90), production (4.60) and productivity (1.70) of vegetables in India were positive and significant at one percent level which were observed by the high value of ‘t’ statistics. This represents that there has been a positive growth in area, production and productivity of vegetables in India. Therefore the alternative hypothesis (H₁) is accepted in area, production and productivity of vegetables in India.

**Fruits – Karnataka state level**

Hypothesis

\( H_0 = \) There is no positive growth in area, production and productivity of fruits in Karnataka

\( H_1 = \) There is a positive growth in area, production and productivity of fruits in Karnataka

The table 4.5 represents that the compound growth rate of area (1.80) is positive and statistically significant at one percent level value which is observed by the high value of ‘t’ statistics. It represents that there has been a positive growth in area of fruits in Karnataka. The compound growth rate of production (0.90) shows positive but which is insignificant. Whereas in case of compound growth rate of productivity of fruits it is negative with a value of -0.90. Therefore alternative hypothesis (H₁) is accepted only in the case of area and concluded that there is a positive growth in area and not in production and productivity.

**Vegetables - Karnataka state level**

Hypothesis

\( H_0 = \) There is no positive growth in area, production and productivity of vegetables in Karnataka

\( H_1 = \) There is a positive growth in area, production and productivity of vegetables in Karnataka

The table 4.7 indicates that the compound growth rate of area (1.90) and production (2.50) of vegetables are positive and statistically significant at 1% level which is observed by the high values of ‘t’ statistics. It reveals that there has been a positive growth in area and production of vegetables in Karnataka. Whereas in case
of productivity of vegetables compound growth rate is positive (0.70), which is not statistically significant. Therefore the alternative hypothesis ($H_1$) is accepted in area and production of vegetables in Karnataka not in productivity.

**Hypothesis 2: There is an inverse relationship between arrivals and price of vegetables and fruits in raitharasanthe**

**Beans**

The result of seasonal indices of monthly arrivals and prices of beans to Raithara Santhe for the study period (table 4.2.6 and fig 4.2.1) shows that there is an inverse relationship between arrivals and prices of beans. Hence it is concluded that the study proves the hypothesis of inverse relationship between arrivals and price of beans.

**Brinjal**

The analysis of seasonal indices of monthly arrivals and prices of brinjal to Raithara Santhe for the study period (table 4.2.10 and fig 4.2.3) indicates that there is an inverse relationship between arrivals and prices of brinjal. Therefore we can conclude that the study supports the hypothesis of inverse relationship between arrivals and prices of brinjal.

**Tomato**

The analysis of seasonal indices of monthly arrivals and prices of tomato to Raithara Santhe for the study period (table 4.2.14 and fig 4.2.5) reveals that there is an inverse relationship between arrivals and prices of tomato. Hence it is concluded that the hypothesis of there is an inverse relationship between arrivals and price of tomato is proved.

**Papaya**

The result of seasonal indices of monthly arrivals and prices of papaya to Raithara Santhe for the study period (table 4.2.18 and fig 4.2.7) shows that there is an inverse relationship between arrivals and prices of papaya. On the basis of result it is concluded that the study clearly brings out the hypothesis of inverse relationship between arrivals and price of papaya.
Sapota

The analysis of seasonal indices of monthly arrivals and prices of sapota to Raithara Santhe for the study period (table 4.2.22 and fig 4.2.9) reveals that there is an inverse relationship between arrivals and prices of sapota. Therefore, it is concluded that the hypothesis, there is an inverse relationship between arrivals and price of sapota is proved in the study.

Lemon

The result of seasonal indices of monthly arrivals and prices of lemon to Raithara Santhe for the study period (table 4.2.26 and fig 4.2.11) reveals that except in March, April and December there is an inverse relationship between arrivals and prices of lemon in the market. Therefore we can conclude that the study do not supports the hypothesis of inverse relationship between arrivals and prices of lemon.

Hypothesis 3: Marketable surplus of Vegetables and fruits are determined by factors like education, farm size, family size, distance and price.

Beans

$H_0 =$ Marketable surplus of Beans is not determined by factors like education, farm size, family size, distance and price

$H_1 =$ Marketable surplus of Beans is determined by factors like education, farm size, family size, distance and price

It is clear from the results of the linear regression model (table 5.14) that, the variables like farm size and family size were found to be important factors influencing on marketable surplus of beans. These two factors are observed to be statistically significant at one percent level. But the coefficients of education, distance and price show positive but they were insignificant. Hence alternative hypothesis ($H_1$) is accepted in factors like farm size and family size and not in education, price and distance.

Brinjal

$H_0 =$ Marketable surplus of brinjal is not determined by factors like education, farm size, family size, distance and price

$H_1 =$ Marketable surplus of brinjal is determined by factors like education, farm size, family size, distance and price
The result of the linear regression model (table 5.28) indicates that, the variables like farm size and family size were found to be statistically highly significant at one percent level. But in education the coefficient shows positive but insignificant. In distance and price coefficients shows negative. Hence alternative hypothesis (H$_1$) is accepted in factors like farm size and family size and not in education, price and distance.

**Tomato**

H$_0$ = Marketable surplus of Tomato is not determined by factors like education, farm size, family size, distance and price

H$_1$ = Marketable surplus of Tomato is determined by factors like education, farm size, family size, distance and price

The result of the linear regression model (table 5.42) shows that farm size and distance were statistically highly significant at one percent level. But coefficients of education and family size show positive which were insignificant. The coefficient of price shows negative. Therefore alternative hypothesis (H$_1$) is accepted only in variables like farm size and distance and not in education, price and family size.

**Papaya**

H$_0$ = Marketable surplus of Papaya is not determined by factors like education, farm size, family size, distance and price

H$_1$ = Marketable surplus of Papaya is determined by factors like education, farm size, family size, distance and price

The results of linear regression model (table 5.56) indicates that among the independent factors only family size is observed to be significant at one percent level and have influence on marketable surplus of papaya. The coefficients of other variables like price, distance, and farm size show positive but they were insignificant. The coefficient of education is negative. Therefore, alternative hypothesis (H$_1$) is accepted in variable like farm size and not in education, family size, distance and price.
Sapota

H₀ = Marketable surplus of Sapota is not determined by factors like education, farm size, family size, distance and price

H₁ = Marketable surplus of Sapota is determined by factors like education, farm size, family size, distance and price

The results of the linear regression model shows that (table 5.70), the variables like farm size and family size were found to be important factors influencing on marketable surplus of sapota. These two factors are observed to be statistically significant at one percent level. But coefficient of education shows positive which is insignificant. The coefficient of distance and price shows negative. Hence alternative hypothesis (H₁) is accepted in factors like farm size and family size and not in education, price and distance.

Lemon

H₀ = Marketable surplus of Lemon is not determined by factors like education, farm size, family size, distance and price

H₁ = Marketable surplus of Lemon is determined by factors like education, farm size, family size, distance and price

The results of the linear regression model of Lemon (table 5.84) shows that among five factors price and farm size have found to substantially influence the marketable surplus of lemon. The influences of price and farm size were statistically significant at one percent level. But coefficient of education and family size shows positive but they were insignificant. The coefficient of distance is negative. Therefore alternative hypothesis (H₁) is accepted only in variables like price and farm size and not in education, family size and distance.

Hypothesis 4: Farmers in the Raithara Santhe are getting highest share of the price paid by consumers when compared to other alternative marketing system.

Beans

The analysis of channel wise marketing cost, marketing margin, producer’s share in consumer’s price of Beans per quintal (table 6.7) shows that in Raithara Santhe marketing, channel I the producer share in consumer’s price was 95 percent, whereas in alternative marketing channels (APMC) producer share in consumer’s
price was 44.46 percent (channel IV). Therefore we can conclude that, the study proves the hypothesis of farmers in the Raithara Santhe are getting highest share of the price paid by the consumers when compared to other alternative marketing system.

**Brinjal**

The results of channel wise marketing cost, marketing margin, producer’s share in consumer’s price of Brinjal per quintal (table 6.16) reveals that among five channels, Channel I (Raithara Santhe) was found to be most efficient, where producer share in consumer’s price was highest 92.68 percent and low in alternative marketing channels like (APMC) channel IV 46.94 percent. The results supports the hypothesis of farmers in the Raithara Santhe getting highest share of the price paid by consumers when compared to other alternative marketing system.

**Tomato**

It is clear from the results of channel wise marketing cost, marketing margin, producer’s share in consumer’s price of Tomato per quintal (table 6.25) that in Raithara Santhe, channel I producers realize shares of 91.77 percent of the consumer rupee. In the case of alternative marketing channels like (APMC) Channel IV producer’s share in consumer’s price was 39.04 percent. Hence we can conclude that the study brings out clearly the hypothesis of farmers in Raithara Santhe market gets higher share in consumer’s rupee when compared with other alternative marketing channels.

**Papaya**

The analysis of channel wise marketing cost, marketing margin, producer’s share in consumer’s price of Papya per quintal (table 6.33) indicates that among four channels, in Raithara Santhe, channel I, where producer realizes 87.5 percent in consumer’s price. In alternative marketing channels like (APMC) channel III the producer share in consumer’s price was too low 23.56 percent. Therefore we can conclude that the study proves the hypothesis of farmers gets highest share in consumer’s price in Raithara Santhe when compared with other alternative marketing system.
Sapota

The results of channel wise marketing cost, marketing margin, producer’s share in consumer’s price of Sapota per quintal (table 6.41) shows that among four channels Raithara santhe, channel I is consider to be most efficient one where producer’s share in consumer’s price was high 94.16 percent. It was low in alternative marketing channel VI like (HOPCOMS) where producers share in consumer’s price is low 39.54 percent. Therefore it is concluded that the study clearly brings out the hypothesis of farmers gets highest share in consumer’s price in Raithara Santhe when compared with other alternative marketing system.

Lemon

The analysis of channel wise marketing cost, marketing margin, producer’s share in consumer’s price of Lemon per quintal (table 6.49) indicates that among four channels, in Raithara santhe (channel I) where producer realizes 96.53 percent in consumer’s price when compared with alternative marketing channels like (APMC) channel III where the producer share in consumer’s price was too low 60.20 percent. Hence it is concluded that the analysis proves the hypothesis of farmer’s gets highest share in consumer’s price in Raithara Santhe when compared with other alternative marketing system.

9.4 Conclusion:

The area, production and yield of fruits and vegetables have shown a better growth rate at all-India level as compared to Karanataka state level. The arrival of fruits and vegetables in the markets is significantly influenced by the prevailing prices and by and large, there is an inverse relationship between the arrivals and the prevailing prices of the commodities. The marketable surplus of the commodities is largely influenced by the retention at farm level such as wages in kind, family consumption and harvest losses. At the market, the actual marketed surplus is determined by the extent of transport loss and reduction in weight of the commodity. The farmers have a choice of marketing their product varying from direct sale to the consumer through farmer’s markets or through traders and commission agents depending upon the quantity of produce and the distance to the market. However, farmer’s market which the direct selling is the most efficient channel as the farmer obtains the maximum price. Transportation cost including loading and unloading
charges and packaging are the major expenses borne by the producers in marketing their products. Storage facility is a major constraint for all farmers across the various commodities, as a result of which there is distress sale made by the farmers despite low prices prevailing in the market. The farmers make a choice between farmer’s market and other markets such as HOPCOMS and local markets to sell their produce. The factors influencing the choice of market include age of the farmers, his/her educational level, and family size across the sample commodities taken for the study. The quantity of marketable surplus influenced the choice of market only in one commodity i.e. lemon. The Distance of the market partially influenced the choice of the market. The variables such as area under the crop, price of the commodity and number of working members in the family did not have any influence on the choice of the market.

9.5 Suggestions for Policy Implications

The Study makes few suggestions based on the observations made from the survey results that have policy implications.

1. The area, production under fruits increased significantly at national level during 1991-2013 but the increase in yield of fruits was not so significant. In Karnataka during the same period the growth rate of area and production of fruits were shown positive rate but productivity recorded negative rate. The yield of vegetables at national and state level has increased but not significantly. Policies need to be focused to increase the yields of vegetables and fruits at national and state level. Scientific methods of cultivation of vegetables and fruits need to be carried out to increase the productivity. Research institutes need to be established in the major vegetables and fruit producing regions.

2. The arrivals of vegetables and fruits at raitharasanthe are low compared to HOPCOMS and APMC market due to issue of limited number (2000) of cards. Steps should be taken to increase the number of cards and stalls in raitharasanthe.

3. To achieve stability in arrivals and prices of vegetables and fruits information on area under crop for 20 to 25 kilometers should be collected from the agriculture department and should be given to farmers.
4. In spite of farmers getting the highest share in the consumer’s rupee when sold through Raithara Santhe, majority of the farmers are not using this channel for market their produce for various reasons including unable to stay for long period. Marketing Department need to encourage the farmers through popularization of the advantage of Raithar Santhe.

5. Cold storage facilities should be made available in villages as well as in the markets to store the commodities for a later date and also that the losses can be reduced.

6. The fruit and vegetable market authorities can facilitate farmers to use information technology to know the prevailing prices in various markets so as to take decisions on the choice of markets.

7. In order to overcome inefficiency in Raithara Santhe, there are marketing officers who monitor the transactions in the market without the entry of fake traders. During the survey, it is observed that these marketing officers have not been visiting the Raithara Santhe market regularly. As a result the number of fake traders also transacting in the market have increased. The marketing authorities need to have a look into this matter.

8. Since the transport cost constitutes a significant proportion in the marketing cost, the state road transport authorities can provide free transport service or at concessional rate to farmers for transporting fruits and vegetables to Raithara Santhe market. This free transport facility was made available to the farmers during the initial years of establishing the market, i.e. in 2002-04.

9. Grading and Standardization of vegetables and fruits should be introduced by the marketing department which helps the farmers to get better prices for their produce.
Issues for Future Research

- Consumer Perception towards Raitharasanthe and other Alternative Marketing System
- Impact of Raitharasanthe on Marginal and Small Farmers
- Progress and Problems of Raitharasanthe Market