

Review Paper

Economic Analysis of Arrivals and Prices of Pomegranate in Solapur District of Maharashtra

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ABSTRACT

The price behaviour of different agricultural commodities and the responsiveness of market arrivals to the price movement to reduce the gap in market arrival mark the need for analyzing the market arrivals and prices. This study is based on the secondary data of 15 years from 2005-06 to 2019-20 which was collected from APMC Solapur and APMC Pandharpur in Solapur district. For the analytical framework, the Exponential Regression Equation was used to study the trend in arrivals and prices. During the study period, in Solapur market, arrival was highest in August and the lowest in April. Pandharpur market observed maximum arrival in July whereas the lowest arrival in February. In terms of prices, Solapur market witnessed maximum price per quintal in September whereas minimum price per quintal in May. Pandharpur market recorded highest price per quintal of Pomegranate in February and the lowest price per quintal in November. During the study period, Solapur market witnessed highest positive growth rate whereas Pandharpur market reported a non-significant growth in terms of arrival among the selected markets. In terms of prices, Solapur market showed a positive and significant growth rate while Pandharpur market observed a negative and non-significant growth during the study period. The main season for arrivals of the pomegranate in both markets was from August to December.

HIGHLIGHTS

- Solapur market witnessed positive growth rate in terms of arrival and prices.
- Pandharpur market reported a non-significant growth in terms of arrival and prices.

Keywords: Trend, arrivals, prices, growth rate, Solapur, Pandharpur

In recent years, India's horticultural crop scenario has improved drastically. Horticulture production was just 145.8 million tonnes in 2001-02, which was significantly less than food grain production (212.9 million tonnes). By 2009-10 to 2011-12 both were at par and by 2018-19 horticulture production continuously increased and were higher than the food grain production recording total production of 313.85 million tonnes while food grain production stood at 283.37 million tonnes (NHB, 2019).

During 2019-20, the total pomegranate acreage in India was 275 thousand hectares with a production of 3256 thousand tonnes and productivity of 11.84 MT/ha. The other top countries ranked after India

are China (1.2 lakh ha and 12.0 lakh MT), Iran (0.75 lakh ha and 11.0 lakh MT) and Turkey (0.35 lakh ha and 2.2 lakh MT). The global pomegranate scenario indicates that India has the advantage to come up with promising pomegranate technologies for the benefit of the Indian population (NRCP, 2019).

India is one of the world's leading producer of pomegranate (Aware *et al.* 2019). In terms of production and acreage, Maharashtra ranks first in acreage under cultivation and production followed

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by Gujarat, Karnataka, Madhya Pradesh and Andhra Pradesh (Patel *et al.* 2018).

Table 1: State-wise area, production and productivity of Pomegranate in India (2017-2018)

States	Area (in ₹ 000 ha)	Production (in ₹ 000 tonnes)	Productivity (in MT/ha)
Maharashtra	147.91	1789.46	12.10
Gujarat	30.51	461.75	15.13
Karnataka	25.97	268.23	10.33
Madhya Pradesh	9.68	114.27	11.81
Andhra Pradesh	9.47	139.02	14.69
Rajasthan	4.44	26.58	5.99
India	233.93	2844.52	12.16

Source: NHB database.

In Maharashtra, Pomegranate is mainly cultivated in Solapur, Nashik, Sangli, Satara, Ahmednagar, Pune and to a limited extent in Osmanabad, Jalna, Beed, Aurangabad, Jalgaon and Dhule (Kharat *et al.* 2019). In Maharashtra, the flowering seasons of pomegranate are June-July (Mrig Bahar), September-October (Hasta bahar) and February-March (Ambe bahar). As area and Production of Pomegranate are increasing significantly in Solapur district, the present study was undertaken to study the trends in arrivals and prices of Pomegranate in Solapur district of Maharashtra.

MATERIALS AND METHODS

The time series data on market arrivals and prices were collected over a period of 15 years from 2005-2006 to 2019-2020. In Solapur district, there are a total of 11 functioning Agricultural Produce Market Committee (APMC). The secondary data were collected from one major APMC that is APMC Solapur and the other from APMC Pandharpur. To derive a valuable conclusion from the study, data was analysed by using simple tabular analytical tools such as mean, frequencies, ratios, percentages and functional analysis such as trend and compound growth rate in market arrivals and prices. The analytical techniques employed in the study are explained in the following sections.

Trend in market arrivals and prices

Dhende *et al.* (2020) studied the trend in arrivals

and prices of agricultural commodities using exponential form of equation. To estimate and examine the trends in market arrivals and prices, the following form of equation was utilised.

$$Y = a.b^t$$

Where,

Y = Monthly arrivals/prices

a = Constant

b = Trend coefficient

t = Time period

Annual compound growth rate (CGR) in percentage was calculated as,

$$CGR(\%) = (\text{Antilog of } b - 1) \times 100$$

To carry out accurate and efficient analysis and processing with regard to trend in arrivals and prices of Pomegranate, R statistical software which is a free software environment for statistical computing was employed.

RESULTS AND DISCUSSION

The main aim of the study was to analyze the trend in arrivals and prices of pomegranate in Solapur district.

Trend in arrivals and prices of pomegranate

Like other agricultural commodities, pomegranate is also a seasonal crop. But using crop regulation practices like bahar treatment, it is made available throughout the year in pomegranate growing areas. Monthly variation in arrivals pattern is usually observed in different markets which are eventually reflected in the price prevailing in the market.

Trend in arrivals and prices were examined to study the change in arrivals and prices over the period of time in Solapur and Pandharpur market using exponential regression model. Annual compound growth rate of arrivals and prices of pomegranate in both the selected APMC were also calculated. The time series data on monthly arrivals and prices of pomegranate covering the time period of fifteen years (2005-06 to 2019-20) was collected from APMC, Solapur and APMC Pandharpur.

The mean arrivals and prices of Pomegranate in the selected markets during the study period were

Table 2: Market-wise monthly average of Arrivals and prices of Pomegranate (2005-06 to 2019-20)

Sl. No.	Month	Solapur		Pandharpur	
		Monthly Average (q)	Monthly Average Price (₹/q)	Monthly Average (q)	Monthly Average Price (₹/q)
1	January	104233.94	1812.03	4450.47	4451.09
2	February	108866.27	1958.12	3621.13	4857.60
3	March	79556.54	2038.54	4572.67	4715.32
4	April	75745.47	1821.10	5294.13	4400.49
5	May	92271.34	1675.86	4009	3800.55
6	June	147387	1694.69	5304.34	3763.30
7	July	224238.4	1831.58	8790.34	4006.93
8	August	293400.67	2226.33	8511.34	4213.73
9	September	196414.07	2480.49	6733.9	4445.52
10	October	117437.27	2400.15	4325.34	4323.31
11	November	125914.34	2415.31	3769	3718.73
12	December	134782.07	2107.49	4756.74	4341.96

Note: Simple average was used to find out monthly average.

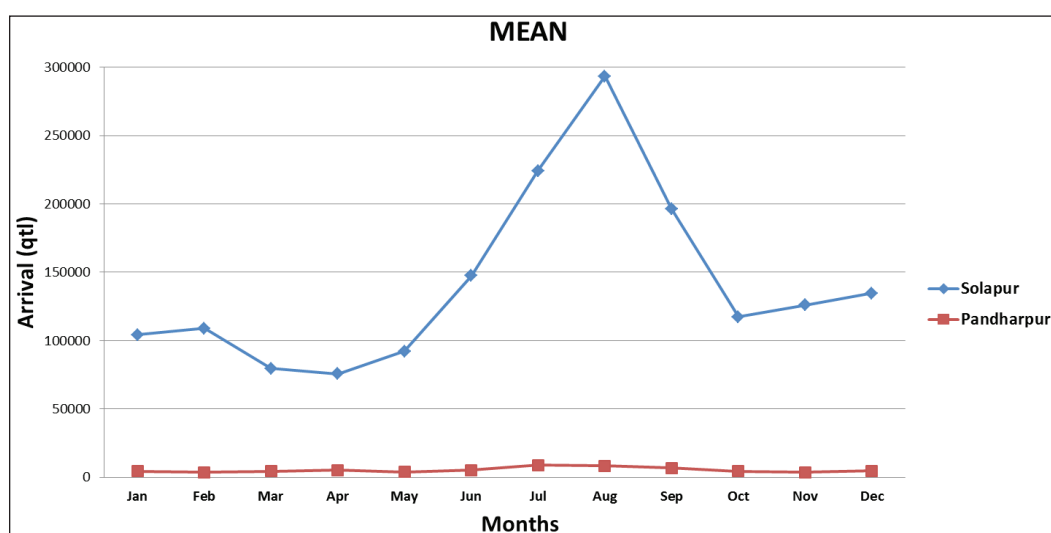


Fig. 1: Graphical representation of Mean of arrivals of Pomegranate in Solapur and Pandharpur market

worked out to examine the trend and the results are presented in Table 2. The results in Table 2 revealed that during the study period, in Solapur market, arrivals were highest in the month of August (293400.67 quintals) as majority of the farmers harvest and bring their produce to the market by mid July while lowest arrivals were recorded in the month of April (75745.47 quintals). Likewise, Pandharpur market observed maximum arrival in the month of July (8790.34 quintals) whereas lowest arrival was observed in the month of February (3621.13 quintals). The results are in correlation with the findings of Ali *et al.* (2018).

The variation in arrivals strongly reflected the price movement in both the market. In Solapur

market, the maximum price per quintal was in the month of September (₹ 2480.49/q) whereas minimum price per quintal was in the month of May (₹ 1675.86/q). Pandharpur market showed highest price per quintal during offseason i.e. in the month of February (₹ 4857.60/q) due to decrease in arrivals in the market and lowest price per quintal in the month of November (₹ 3718.73/q).

Pomegranate Arrivals

Annual Compound Growth Rate with respect to arrival was calculated for Solapur APMC and Pandharpur APMC and the results are presented in Table 3.

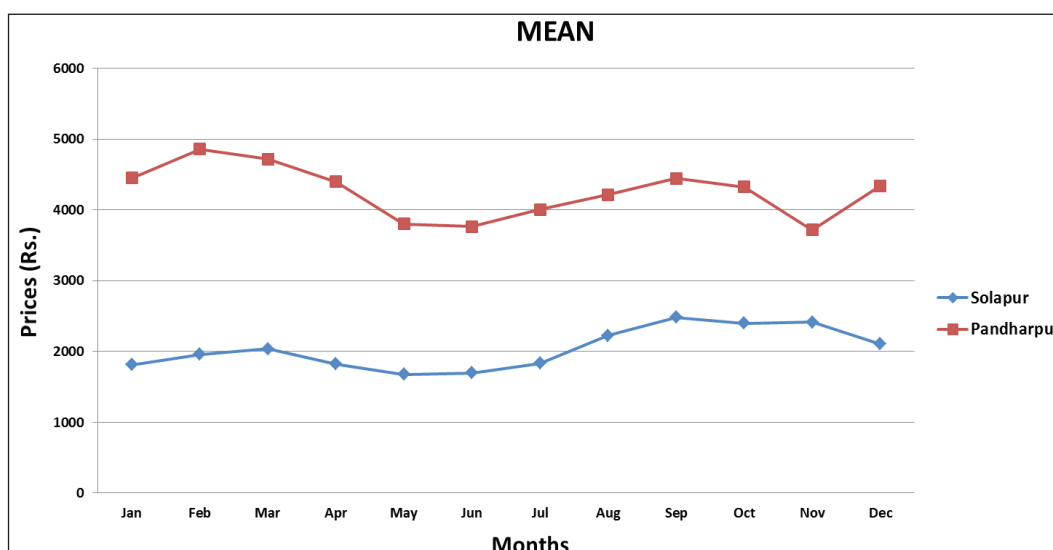


Fig. 2: Graphical representation of Mean of prices of Pomegranate in Solapur and Pandharpur market

Table 3: Marketwise compound growth rate of arrivals of Pomegranate

Particulars	Solapur	Pandharpur
A	11.43	8.435
B	0.054	0.016
R ²	0.223	0.039
t-value	1.69	0.64
CGR	5.58*	1.65

* denotes significance at 10 % level of significance.

The results revealed that both Solapur and Pandharpur market showed positive growth rate with respect to arrivals during the study period. Among both the markets, highest growth rate was observed in Solapur market with compound growth rate at 5.58 per cent per annum at ten per cent level of significance. In Pandharpur market, arrivals recorded a compound growth rate of 1.65 per cent per annum which was statistically non-significant. The results are in close association with the findings of Naidu & Kumari (2013).

Pomegranate Prices

Annual Compound Growth Rate with respect to price was calculated for Solapur APMC and Pandharpur APMC and the results are presented in Table 4.

Table 4 revealed that price in Solapur market witnessed a compound growth rate of 2.54 per cent per annum which was statistically significant at five per cent level of significance.

Table 4: Marketwise compound growth rate of prices of Pomegranate

Particulars	Solapur	Pandharpur
A	7.45	8.42
B	0.025	-0.01
R ²	0.42	0.172
t-value	2.69	-1.44
CGR	2.54**	-0.996

** denotes significant at 5 % level of significance.

While negative and non-significant growth rate of -0.966 per cent was observed in Pandharpur market. Similar findings were reported in the study conducted by Saha et al. (2020).

CONCLUSION

The present study in Solapur district concluded that in Solapur and Pandharpur market, the highest arrivals of pomegranate fruit were in the month of August and July, respectively and lowest arrivals were observed in the month of April and February, respectively. The price of Pomegranate in Solapur market was recorded to be highest in the month of September and lowest in the month of May whereas Pandharpur market witnessed highest prices in the month of July and lowest prices in the month of February. Analysis of the growth rate of arrivals and prices of pomegranate in the selected markets of the study area suggested that Solapur market recorded positive and significant growth rate annually whereas Pandharpur market witnessed

a non-significant growth during the study period. With respect to pomegranate price, Solapur market registered positive and significant growth rate while Pandharpur market showed a negative and non-significant growth during the overall period of study.

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