

AGRICULTURAL PRODUCTIVITY IN ODISHA WITH SPECIAL REFERENCE TO PADDY: AN EXPLORATORY APPROACH

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Abstract:

Odisha's history tells that the state was one of the most economically and prosperous regions in the country. Huge water resources, forests, rainfall and adequate labour had been key factors for achieving growth for agriculture development. In the state, majority of the total population is living in rural areas where agriculture is considered as the mainstay of the people. Eight out of ten people living in rural areas in the state rely primarily on the agriculture and allied sectors of the economy. Odisha agriculture is highly concentrated in low productive and high water consuming paddy cultivation with little diversification towards pulses, oilseeds and other high value crops (HVCs): included sugarcane, fruits and vegetables etc., which fetch higher net returns. There is a need for increase in area under certified seed, irrigation and other productivity enhancing inputs to increase farmers' income in all crops. This study specifically analyses if there is any relationship between Agricultural productivity with special reference to paddy and the Gross domestic product of Odisha. And it is found that there is no significant relationship exists between these variables.

Keywords: Agriculture, Productivity, Gross domestic product, Paddy

1. INTRODUCTION:

Agriculture is a vital sector of the economy of Odisha and a good deal has been achieved in this sector during the plan period. Farm production has increased manifold and yields of major crops such as paddy, pulses, oilseeds and vegetables have more than trebled in the last four and half decades. The impressive long term growth in agriculture has helped in taking the state out of famines and serious food shortages into one of the food surplus states in the country and ensuring food, nutrition and livelihood security. It fosters direct rural demand for basic for consumer goods such as clothing and sugar and creates indirect demand for basic and

capital goods (such as steel and machinery) similarly it also influences savings and investment of household .Rangeranjan (1982) concluded that one percent growth in agricultural production increases industrial production by about 0.5 percent and thus national income by more than 0.7 percent .So, development of the agricultural sector is essential for achieving faster rate of economic growth. Recognizing the importance of agricultural sector in the state in economy, the government of Odisha have come up with a industry. The state agriculture policy 1996 aims at doubling the production of food grain and oil –seeds, generation of adequate employment opportunities in the rural sector and eradication of rural poverty within a specific time frame.

2. LITERATURE REVIEW:

Bhalla and Alagh (1979) laid the foundation of district level studies on spatio-temporal variations in levels of agricultural development in India. It reveals vast variations in yields across crops and districts. The study by Bhalla and Singh (2001) is a milestone in contemporary research in this area which also indicates wide inter-district and inter-crop inequalities. However, the findings point to declining disparities over the years and convergence.

Ajagekar and Masal (2011) on agricultural development in Kolhapur district of Maharashtra for the year 2003-04 reveals glaring disparities across the tehsils and still greater inequalities across the villages at the grass roots level. From their study relating to South 24 Parganas district of West Bengal for the year 2001, Mandal and Dhara (2012) found a wide range of variations with higher productivity in Blocks under the south-western and north-central parts of the district than others.

Swain (2002) covering three benchmark years i.e. 1980-81, 1990-91 and 1998-99. A notable finding of the studies is that regional disparities have moderated in the post-reform period 1991-1999 because of implementation of backward area development programmes by the government.

Somasekharan et al. (2011) studied the regional development in agriculture in 15 major states of India for the period 1971-2007. Their findings indicate that regional disparities in agricultural performance, which increased during 1971-88, moderated during 1988-2007 suggesting a kind of convergence.

Saha and Swain Nathan (1994) analyzed the agricultural production in West Bengal n 1980s. They employed log-linear and log-quadratic regression models for estimating the growth rates. Using an index number series on aggregate agricultural production , the exponential growth rate of West Bengal for the period of 1981-82 to 1990-91 was found to be 6.4 percent per annum. They also found that the estimates of growth did not change substantially.

3. OBJECTIVES OF THE STUDY:

1. To discuss the development, planning and policies with respect to agriculture in Odisha.
2. To figure out empirically if there is any Co- relationship exists between the GDP of Odisha and Agricultural Productivity in Odisha in the post reform period.

4. HYPOTHESIS

H₁-- There is a positive and significant relationship between GDP and Agricultural Productivity in Odisha.

5. METHODOLOGY AND DATA

This study employed time series secondary data spanning from 2002-03 to 2016-17 The study mostly based on secondary data and the source of data is district agriculture office. Economic survey, government of Odisha and other government publications will be used widely. We have used Pearson's Bi-variate Correlation and T-test to test the significance.

6. AGRICULTURE IN ODISHAN PERSPECTIVE:

Odisha is basically an agrarian state. More than 83 per cent of its total population lives in rural areas and depends primarily on agriculture for livelihood. The performance of agriculture determines food and nutrition security of the population and is important for reducing poverty and achieving inclusive growth. During the last few decades of development process, the performance of the agricultural sector provides a dismal picture that Development of Agriculture Sector in Odisha: Post-. . . 117 has affected particularly marginal sections of the society and the state's economy in general. In Odisha, agriculture has become progressively backward and it has neither succeeded to act as an engine of growth nor has it been able to meet the emerging challenges like poverty, hunger and unemployment. Share of agriculture along with allied activities to NSDP has come down from 28.13% in 2001 to 22.46% in the year 2006-07. The reason for the decline in share of this sector in States NSDP was relatively slow rate of growth in agriculture as compared to that of industries and service sectors of the economy particularly after the introduction of New Economic Policy in 1991. The decline in agriculture growth during both pre and post reform period is the major concerns for policy makers and researchers. Occurrence of frequent natural calamities, poor investment, and lack of effective agrarian structure, weak credit facilities and large indebtedness among the small and marginal farmers are some of the major drawbacks which have not been properly addressed by the people form bottom to top level. This shows that the development of rural areas with adequate infrastructural facilities should receive top priority in our developmental programmes by the planners and policy makers of the state. But the fact is that in spite of it, even after 60 years of

independence, the pace of poverty reduction as well as the employment trend has not seen any alarming change in the state, particularly in the post-economic reform period.

7. IMPORTANCE OF AGRICULTURE IN THE STATE:

Odisha is primarily an agrarian economy. Agriculture is the state's dominant sector with a contribution of nearly 20 per cent to the Net State Domestic Product (NSDP). About 73 per cent of total main workers are engaged in agriculture sector. Nearly 82 per cent of total population live in rural areas. Though the contribution of agriculture to NSDP has significantly declined from 67 per cent in 1951 to around 20.7 per cent in 2011, the percentage of workforce engaged in agriculture has declined marginally from 73.8 per cent in 1960 and 68.7 per cent in 2011. This implies that there has

Table: 1

Average size of operational holdings by major size groups during 2010-11

Size group	Number of Holdings	Area Operated(ha.)	Average size of Holdings(ha.)
Marginal	3368296	1921842	0.57
Small	918647	1497752	1.63
Semi-medium	311261	918947	2.95
Medium	63688	381272	5.99
Large	5574	132201	23.72
All sizes 2010-11	4667466	4852014	1.04
2005-06 Census	4356392	5019476	1.15

Source: Directorate of Economics and Statistics

been an overcrowding in agriculture without any perceptible increase in production. There has been a spectacular increase in disguised unemployment or underemployment in the agriculture sector with zero or near zero marginal productivity of agricultural labour.

Cultivated land area remaining more or less fixed, with increase in population the land-man ratio has worsened over time. The per capita availability of cultivated land which was 0.39 ha. in 1950 has been drastically reduced to 0.12 ha. in 2011. Agricultural growth holds the key to the overall development of the state by way of creating employment, generating income, providing raw materials to the industrial sector and last but not the least ensuring self-reliance in food production and food security to the deprived sections.

8. STUDY 1:

In this we have taken two variables X and Y. Here X represents Agricultural productivity in Odisha and Y represents The GDP of Odisha from the year 2002-03 to 2017-18

(Table-3: Agricultural productivity and GDP of Odisha in different years)

Years	Agricultural productivity IN % (Paddy) (Total Production/Net area Sown*100)	GDP (Rs. lakh)
2002-03	57.11	5480111
2003-04	118.56	6610014
2004-05	113.90	7772943
2005-06	120.52	8509649
2006-07	182.90	10183947
2007-08	203.15	12927445
2008-09	184.19	14849071
2009-10	220.14	16294643
2010-11	220.95	19752990
2011-12	166.27	22058927
2012-13	255.67	25122046
2013-14	202.69	27297992
2014-15	257.53	31081024
2015-16	159.71	348,107
2016-17	190	375747

(Source: self compiled)

By applying Karl Pearson's co-efficient of Correlation;

$$\text{Correl}(X, Y) = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

Correlation coefficient of the two data sets above according to the above formula **0.67**

From this it is obvious that there is positive correlation between the **Agricultural productivity and GDP**

So we can say here that **Agricultural productivity and GDP** are correlated to the extent of **67 %**

To know its significance we will apply T- test.

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

H₀=relationship is not significant.

H₁= relationship is significant.

Result of t-Test:

	PRODUCTIVITY OF PADDY	GDP
Mean	176.886	13910977.07
Variance	3102.881769	9.14312E+13
Observations	15	15
Pearson Correlation	0.67429626	
Hypothesized Mean Difference	0	
df	14	
t Stat	-5.634460533	
P(T<=t) one-tail	3.07931E-05	
t Critical one-tail	1.761310115	
P(T<=t) two-tail	6.15862E-05	
t Critical two-tail	2.144786681	

Source: Excel output

By applying t- statistics the value comes to -5.63

Critical value of t for $V=14$, and $\alpha = 0.05$ in a two tailed test is 2.144

Calculated value < Critical value. Hence null hypothesis is accepted so the relationship between **Agricultural productivity** and **GDP** is not significant.

9. ANALYSIS:

From the above test we found that agricultural productivity though it is positive but not affecting the Gross Domestic product of Odisha. Both are also related not to a greater extent. So if we analyse them we can conclude that there are so many other factors that are also contributing the Gross domestic Product of Odisha. Nevertheless agriculture in Odisha Specially paddy must be the focal point of the Government as well as it's several stakeholders to prepare and plan policies, plans and strategies to wipe out the anomalies as well as stabilizing the growth of Agriculture in our state.

10. CONCLUSION:

The finding of present study reflects that the growth of agricultural productivity of almost all major crops grown in Odisha during the last decade have been stagnated which required immediate attention for increase in public investment in the primary sector of the state. Acceleration of growth in the country since liberalization has reduced poverty substantially at the national level; however Odisha has remained backward in terms of growth, poverty reduction, unemployment and overall development. Our agricultural sector is still technologically deficient vis-a-vis nations' agriculture. Poor economic condition of farmers, large indebtedness, an unfavourable agrarian structure and lack of favourable government strategy for the development of this sector provides dismal scenario within the districts and the state particularly within the nation Unless agriculture production and productivity is improved a large number of people living on this sector will continue to live in a miserable life. Different farming operations need high degree of precision to increase the efficiency of the inputs and reduce the losses.

11. REFERENCES:

1. Economic Survey, Govt. of Orissa, 2015-16, 2016-17
2. Economic Survey, Govt. of India, 2015-16, 2016-17
3. Bhaduri, A (1983): The Economic Structure of Backward Agriculture, London.

4. Bhalla, GS. And Singh Gurmail (1996): The Impact of GATT on Punjab Agriculture, New Delhi, Ajanta Publication.
5. Boyce, J.K. (1987): Agrarian Impose in Bengal: Institutional Constraints to technological change, New York.
6. Mishra S.N(1997) : Agricultural liberalization and development strategy in ninth plan, EPW Pol. 32 No. 13.
7. Saha, A and Swaminathan M (1994) Agricultural Growth in West Bengal in 1980s.
8. A Desegregation by districts and crops, Economic and Political Weekly, March 26, Vol. 29, No. 13.
9. Vyass V.S. (2001): Agriculture Second Round on reform's, Economic and Political Weekly, Vol. No. 10.
10. Arun S. Patel (1981), "Irrigation: Its Employment Impact in the Command Areas of Medium Irrigation Projects in Gujarat", Indian Journal of Agricultural Economics, Vol. XXXVI, No.4,October-December, pp. 20-22.
11. Ashturkar B.W. (1986), "Progress and Prospects of Irrigation Water Management in Maharastra", Indian Journal of Agricultural Economics, Vol. 41(4), pp.523-528.
12. Dhar, P. K. (2003), "Indian Economy-Its Growing Dimensions", Kalyani Publishers, New Delhi. 4. Districts Statistical Handbooks (2006-07), various Issues, Directorate of Economics and Statistics, Bhubaneswar, Odisha.
13. Mishra S (2009). Poverty and Agrarian Distress in Orissa, Indira Gandhi Institute of Development Research, Mumbai September 2009. <http://www.igidr.ac.in/pdf/publication/WP-2009-006.pdf>.
14. Myrdal G (1957). Economic Theory and Under-developed Regions. London: Duck-worth.
15. Orissa Agricultural Statistics (2011). Directorate of Agricultural and Food Production, Orissa, Bhubaneswar, various issues.