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Agro - Processing Industries and Rural Development: Analytical Study on Bikaner Zone

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Abstract - Agriculture and development is inter connect. Industries can't operate without agricultural activity and single economy can't be developed without industries. Agriculture assumes backbone of every economy. Many of industries get raw material from primary sector which related to agriculture sector. Agro-processing industries can play a significant role in rural based economy like India. Many of developing countries have boosted their economy through agro based industries like Ghana and Argentina. India is an agrarian economy and agro based industries be a major part in economy especially in Rajasthan, although this sector has much potential for rural economy but ground report is different because villages and their residential could not benefited from these industries. In this research paper fully discussed on the contribution of agro based industries in the development of rural economy special focus on northern Rajasthan especially Bikaner zone which include Sri Ganganagar, Hanumangarh, Churu, and Bikaner.The research is based on both analytical interpretation and statistical evidence derived from survey data collected from agro-processing units, farmers, labors and academicians in the Bikaner zone. The findings suggest that although agro-processing industries are closely related to rural economy but their benefits are not adequately transmitted to rural communities because most agro-processing units are operate in urban and semi urban region.

The study concludes that agro-processing industries in the Bikaner zone contribute to economic activity but their impact on rural development remains limited due to infrastructural constraints, limited farmer participation, dominance of intermediaries and inadequate policy implementation

Keywords: Agro processing industries, rural development, Bikaner zone, local and abroad, agronomy, farmers, labors, academicians, entrepreneurs, rural economy, Rajasthan economy, Indian food processing market, value addition.

Introduction - Indian economy depends on agro activities, approximate 60% population engaged in agro activities and approximate 70% population living in village that's mean Indian economy is village based economy. So we can describe Indian economy as Agronomy because major part of our economy is enveloped by agriculture or agro related activities. Although agriculture is boon for India but more dependency only on agriculture of villagers is hazard in path of develop. There is above 60% villagers engaged in agriculture in our country. Agro based industries are treasury of potential and measure of reduce the dependency on agriculture of villagers. As we know that "development" word include income, health, living standard and happiness, so development is not only increasing the GDP but empowerment in every sector, every group and in every type of living. Mahatma Gandhi said also that economy/ country can't be developed unless rural economy will not be developed. In various found that agro based industries be an effective mean to boost rural economy. Agro processing sector have that capacity which provide local employment to villagers, motivate to more production and learn value addition in raw in produce, despite of these reduce post – harvest losses, reduce dependency on fields, sound to secondary sector and upward the living standard in rural area. Most perfect example is Brazil, there above 50% population earn its livelihood by agriculture like India but they put the agro processing industries in center point in policy making and agro processing industries are strengthened to such an extent that their contribution to GDP reached above 40%. Most of Brazil's agricultural products are export to USA and Europe. Indonesia and China also special focus on agro processing industries.

India is the fourth largest economy in the world. The agro processing sector has emerged as a vital contributor to the economy, driven by the progressive policy measures of the ministryof
food processing industries (MoFPI). India's diverse agro-climate conditions provide it with a strong and sustainable raw material base.

The Indian agro processing market reached US$354.5 billion in 2024 and is expected to grow to US$535 billion by the end of FY26. This industry contributes around 32% of

the overall Indian food market, 13% of total exports and 6% of industrial investment.

It is also a significant source of employment, engaging approximately 1.93 million people in the registered sector and 5.1 million workers in the unregistered sector.

The development of agro-processing industries is often viewed as a crucial step toward rural industrialization. By locating processing units close to agricultural production centers, these industries can create employment opportunities, reduce transportation costs and enhance the economic value of agricultural produce.

Rajasthan is the largest state of India, is also an agricultural state. The northern districts of Rajasthan, especially Ganganagar and Hanumangarh are irrigated and are the leading agricultural producing districts of the state. But when a survey was conducted to analyze the contribution of agro processing industries in rural development, a lot of difference was seen in the actual situation.

The Bikaner zone of Rajasthan, consisting of districts such as Bikaner, Churu, Hanumangarh, and Sri Ganganagar, provides an interesting context for examining the relationship between agro-processing industries and rural development. The region has witnessed considerable agricultural growth following the expansion of irrigation facilities under the Indira Gandhi Canal Project. Crops such as wheat, mustard, guar, pulses, and cumin are widely cultivated in the region, providing a strong raw material base for agro-processing industries. Despite these favorable conditions, the expected benefits of agro-processing industries in terms of rural development have not been fully realized. Although several processing units operate in the region, rural communities continue to face challenges such as unemployment, low income level and limited industrial infrastructure.

This research paper therefore examines the paradox that **agro-processing industries are closely connected to the rural economy but do not significantly contribute to rural development in the Bikaner zone**.

Objectives of the Study : The study seeks to analyze the developmental role of agro-processing industries in the Bikaner zone of Rajasthan and identify the factors that influence their impact on rural communities. The research specifically aims to examine the relationship between agro-processing industries and their contribution to rural employment and income generation and identify structural constraints that limit their effectiveness as instruments of rural development.

Another important objective of the study is to analyze the perceptions of various stakeholders including farmers, labors, entrepreneurs and academicians regarding the role of agro-processing industries in rural economic transformation.

Research Methodology : For this research we have adopted descriptive and analytical research design. Both primary and secondary data sources are used to examine the relationship between agro-processing industries and rural development in the Bikaner zone.

Primary data were collected through structured questionnaires/ schedules and field surveys conducted among four categories of respondents: agro-processing industrial units, farmers, labors and academicians.

Data analysis: Data which collected from various respondents are analyzed here through table and other analytical techniques. The sample covers major agricultural districts of the Bikaner zone (like GANUMANGARH and GANGANAGAR) and provides a representative overview of stakeholder perceptions regarding the role of agro-processing industries in rural development.

Secondary data were obtained from government reports, agricultural statistics, research publications, and policy documents related to agro-industrial development in Rajasthan.

The analysis combines descriptive interpretation with statistical tabulation in order to highlight trends and patterns observed in the survey data.

Table.1: Sample Distribution of Respondents**

Category	Sample Size
Agro-processing units	30
Farmers	150
Labors	320
Academicians	10
Total Respondents	**510**

Agro-Processing Industries in the Bikaner Zone : The Bikaner zone has developed a significant agro-industrial base due to the availability of agricultural raw materials. The major agro-processing industries operating in the region include cotton mills, mustard oil mills, flour mills, guar gum processing units, spice processing units and pulse mills.

The growth of these industries is closely associated with agricultural production patterns in the region. Mustard cultivation supports oil extraction units, wheat production supports flour mills, and guar cultivation has led to the establishment of guar gum processing industries that supply products to domestic and international markets.

The presence of these industries demonstrates the strong relationship between agricultural production and industrial activities in the region. However, the existence of such industries alone does not guarantee rural economic transformation.

Table 2

Type of Unit	No. of Units	Percent
Cotton Mills	**18**	**60%**
Oil Processing Units	**6**	**20%**
Food Processing Units	**3**	**10%**
Other Agro-based Units	**3**	**10%**
Total	**30**	**100**

For the study we have taken 18 cotton factories sample collected out of 30, 6 oil mills, 3 food processing units and

three others like dairies etc. Mainly HANUMANGARH and SRI GANGANAGAR have more cotton factories.

Table showing that cotton factories which 60% .Oil mills have 20%, 10% food processing units and 10% other includes rice, peanut factories.

Employment Generation by Agro-Processing Industries : One of the primary expectations from agro-processing industries is their ability to generate employment opportunities in rural areas. The survey data indicate that while these industries do provide employment, the scale of employment generation remains relatively limited compared to the size of the rural workforce. It is also a significant source of employment, engaging approximately 1.93 million people in the registered sector and 5.1 million workers in the unregistered sector.

But the survey found that local villagers are not able to get permanent employment in the agro-processing units which operating in Bikaner zone. Firstly, these units are located in urban areas, secondly, the workers working in these units mainly come from UP and Bihar.

Table 3

Type of employment	Percentage
Local	25
Abroad	75
Total	100

Table 4

Category	No. of Workers	Percentage
Rural	102	31.88
Urban	218	68.12
Total	320	100.00

Table 5

Employment	No of workers	Percentage
Permanent	75	23.44
Daily wages	220	68.75
Contractual	25	7.81
Total	320	100.00

Table 3, 4 and 5 are clearly explained the status of employment generation by these units. Table No. 3 is reveals that employment generated by agro-processing units is largely abroad in nature. The table indicate that agro based industries of this zone are provide maximum permanent employment to Bihar's and UP's labor who capable and skilled for these industries. According to industrialist local labors are unskilled and they have more family responsibilities so they could not give more efficiency and time. There is only 25% local permanent employment which is very low but again we can see that there are possibilities if these industries provide training and opportunities to local side.

Table 4 is indicates that only about 31.88% of employment opportunities are provided to rural workers and 68.12% for urban workers, highlighting the limited role of agro-processing industries in rural employment generation. This question is very important to this rural development study and table reveal very strange result.

Table 5 analysis is much important and useful for this research because research is to be found out the contribution of APIs in development of rural economy. Rural economy means there most of population illiterate, maximum in labor group, they have neither land for cultivate nor other option of employment and are deprived of basic needs. My research found that the labor in the agro processing industries here comes from other state like UP or Bihar.

The proportion of local labor is found to be very low, I have taken all the samples (which mentioned above 320) of local labor only. Here I would like to clarify that although these units' contribution not at the local level but definitely at the national level.

The table shows that only 23.44% local labor on permanent employment in this industry. 68.75% a huge number of workers on daily wages means they are not permanent, they are not secure. Although these units of agro processing are provide employment to many people of UP and Bihar but local rural area also has expectations from these units.

The data reveal that a large proportion of workers in agro-processing industries are employed on a daily wage basis rather than as permanent employees. This indicates that the employment generated by these industries is often irregular and lacks job security.

The predominance of casual labor reduces the potential of agro-processing industries to provide stable livelihood opportunities for rural populations.

Perceptions of respondents regarding Rural Development

In order to evaluate the impact of agro-processing industries on rural development, the perceptions of different respondents were analyzed.

****Table 6 : Farmers' Perception of Agro-Processing Industries' Impact on Rural Income****

Response	Percentage
Significant impact	10%
Moderate impact	20%
No significant impact	70%

The results indicate that a majority of farmers believe that agro-processing industries have **little or no impact on their income levels**. This suggests that farmers do not benefit substantially from value addition in agro-processing industries.

The main reason of this difference revealed in the survey is that these units do not buy raw material (crops) directly from the farmers but them from the MANDI and the farmers also find it more convenient to sell their crops in the MANDI. This means that the farmers and these units have not yet been connected.

Table 7 : Labors' Perception of Employment Opportunities**

Category	Percentage
Yes (employment opportunities increased)	38.46%
No (no significant change)	61.54%

The responses of labors also suggest that agro-processing industries have not significantly improved employment opportunities in rural areas. Because these units have not yet reached inrural areas completely or trained rural unskilled workers. The primary reason for this was found to be that these units obtain the required trained workers from outside states like UP and Bihar.

Table 8

Level / gender	Male	Female	Total
Extremely	5 (83.33%)	3 (75%)	8 (80%)
Something	1 (16.67%)	1 (25%)	2 (20%)
No	0	0	0
Total	6 (100%)	4 (100%)	10 (100%)

Table 8 showing that 80% learned academicians accept importance of agro processing industries in rural development. They are present argue that if increase agro processing units in this region then local labor and farmers are connect to these units slowly and likely ratio of local labor will be increase. 20% academicians accept the importance of such industry but comparative low then above 80%.

The noticeable finding in above table that there is a single professor has not rejected the importance of agro-processing sector it is a great sign and potential of agro industries.

Structural Constraints : Several structural factors limit the ability of agro-processing industries to promote rural development in the Bikaner zone. One of the most important challenges is inadequate infrastructure in rural areas. Processing industries require reliable electricity supply, transportation networks, storage facilities and water resources which are often insufficient in rural villages.

Another significant constraint is the limited participation of farmers in processing activities. Most farmers sell their produce immediately after harvest due to financial pressures and lack of storage facilities. This prevents them from benefiting from price increases that may occur during later stages of processing and marketing.

Financial constraints also play an important role. Establishing agro-processing units requires substantial capital investment, which many rural entrepreneurs cannot afford. Access to institutional credit remains limited, particularly for small-scale entrepreneurs.

In addition, technological limitations reduce the productivity of agro-processing units. Many small industries operate with outdated equipment, resulting in lower efficiency and reduced competitiveness in national and international markets

Discussion : The findings of this study reveal a significant gap between the theoretical potential of agro-processing industries and their actual contribution to rural development in the Bikaner zone.

While these industries are closely linked to agricultural production systems, the benefits of industrialization are not evenly distributed across rural communities. Farmers remain largelyconfined to the role of raw material suppliers, while industrial profits are concentrated among processors, traders and urban entrepreneurs.

This pattern reflects a broader structural imbalance within the agro-industrial system. Without effective institutional mechanisms to ensure equitable distribution of value addition, agro-processing industries may strengthen commercial agricultural networks without necessarily improving rural living standards

Conclusion: Agro-processing industries are widely regarded as a vital link between agriculture and industrial development. According to Mr. Ashok Niwrutti agriculture and industry are integral components of the development of any economy. In regions with strong agricultural bases, these industries have the potential tostimulate rural development through employment generation, income growth, and infrastructure expansion.

The Bikaner zone of Rajasthan possesses favorable conditions for the growth of agro-processing industries due to the availability of agricultural raw materials such as mustard, wheat, guar, and pulses. Several processing units operate in the region, demonstrating a close relationship between agriculture and industry.

However, the findings of this study indicate that the contribution of agro-processing industries to rural development remains limited. Although these industries depend heavily on agricultural production, the benefits of value addition are not adequately distributed among rural communities. Structural constraints such as inadequate infrastructure, limited farmer

Interlink to agro industry, dominance of intermediaries and financial limitations restrict the ability of these industries to function as engines of rural development.

Therefore, while agro-processing industries are closely related to the rural economy, their impact on rural development in the Bikaner zone remains relatively weak. Addressing these structural challenges is essential if agro-processing industries are to fulfill their potential as catalysts for inclusive rural economic transformation.

Policy Recommendations : In order to enhance the developmental impact of agro-processing industries, several policy measures need to be implemented. Establishing rural agro-processing clusters near agricultural production areas can encourage industries to operate closer to farmers and rural workers. Strengthening farmer producer organizations can enable farmers to participate directly in processing and marketing activities.

Improving rural infrastructure is also essential for promoting rural industrialization. Investments in transportation networks, storage facilities, electricity supply and irrigation systems can create a favorable environment for agro-processing industries.

Skill development programs should be introduced to train rural workers in modern processing technologies. Such initiatives can improve productivity and create better employment opportunities.

Government policies should also focus on improving access to credit for rural entrepreneurs who wish to establish small-scale agro-processing units.

In this context, Government should enact a mandate that these units employ local rural workers in a specified proportion. The Government should also strive to ensure that these units are established in rural areas, various incentive and subsidy schemes can be implemented to achieve this.

Entrepreneurs should also focus on wealth maximization instead of profit maximization various efforts should be made to connect directly with farmers like providing storage facilities, quality seeds, suggesting measures to reduce post- harvest losses etc.

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