International Journal of Research in Social Sciences
Vol. 9 Issue 3, March 2019,
ISSN: 2249-2496 Impact Factor: 7.081
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A

Role of agriculture sector on sustainable development of India economy: An Analysis

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Abstract
The country of India is renowned as the "Land of Villages." About 67 percent of India's population lives in villages. Their primary occupation is agriculture and agricultural-related activities. Agriculture is the largest and most important sector of our economy, employing over 70% of the Indian people. Agriculture is critical to the Indian economy. Although its contribution to GDP is currently roughly one-fifth of what it was, it employs 50 percent of the Indian workforce.Despite recent significant growth rates, India continues to face agricultural challenges. As a result, the purpose of this study will focus on agricultural productivity and its future possibilities. Some secondary data has been gathered in order to examine agriculture's realistic scenario and the government's numerous policy programmes.The goal of the study is to discover more about the state of Indian agriculture. They face a number of challenges and obstructions in the form of agro-industry and governments in order to develop agriculture in extreme circumstances, as well as learn about various government initiatives, investments, and policies for agricultural development, and the involvement of agriculture in the Indian economy.

Keywords:GDP,Economy, Agricultural sector

1. Introduction

Agriculture is the economy's primary sector. It makes use of natural resources directly. It is distinguished from the secondary sector (which produces manufactured and other processed items) and the tertiary sector (which produces finished goods) (producing services)(Gulati, 2009). This industry is typically more prominent in developing countries and less important in developed countries. Till the industrial revolution, agriculture employed the great majority of the human population. Farmers raised the majority of their crop for their own consumption rather than as a cash crop for exchange in pre-industrial

agriculture(Sakhare, 2017).Agriculture is the most important sector of the Indian economy. In the last two decades, it has undergone significant transition, with globalisation and liberalisation policies opening up new opportunities for agricultural modernization(Wagh & Dongre, 2016). Due to investments in the sector, it has resulted in not just commercialization and diversification, but also plenty of technological and institutional improvements."Agriculturehas continuously been the backbone of the Indian economy", and despite the concerns about industrialisation,Agriculture has remained a source of national pride over the past six decades.It employs around 60% of the country's overall workforce. Agricultural growth is critical to the country's economic success.Villages contain approximately 67 percent of India's population, earning itslivelihood.Agriculture and other agricultural-related activities are their primary occupations. "Agriculture is the largest and most prominent sector of our economy", employing around 70% of India's people.Agricultural products have traditionally been the primary source of raw materials(Paudel et al., 2012). This demonstrates agriculture's relative perceived significance and predominance in "Indian economy".It also makes a substantial contribution to GDP. The majority of industries rely on agriculture for their basic resources. The country's structured approach to development has allowed it to achieve food grain self-sufficiency and a significant buffer supply (Gil, 2017). These accomplishments were largely made possible by a favourable policy environment. Indian agriculture's objective aimed to attain food security by incentivizing growth and ensuring fair access to food. As a result, severe famines are a thing of the past, and agricultural productivity does not change significantly even when the weather is bad(Morgan, 2017).

Agricultural productivity is crucial for "economic growth, rural development, and poverty reduction in poor developing countries". Agriculture productivity development, in both the agricultural and non-agricultural sectors, is a significant driving force of economic expansion and poverty alleviation(Veer, 2017).Regretfully, as a result of poverty linked to price instability, food and agriculture are once again in the forefront, and rising food costs are on the climb(SW & W, 2017). A global race for agricultural land, large private investments in agriculture fascinated by attractive markets, obstructive import tariffs policies in food staples, the renewal of large-scale agricultural subsidies in the name of food self-sufficiency, and new beneficiary responsibilities to increase agricultural expenditure after 20 decades of neglect have all been developed in recent years to address

the issue of food security(Khan et al., 2012). The fundamental challenge is how to use agriculture to support a structural shift in the economy, therefore we started by looking at agriculture's place in the development process and its ties with other sectors. Agriculture expansion has the potential to significantly reduce poverty in developing countries(Limbore Nilesh V & Khillare Shrirang K, 2015).

2. Concept development

Following the green revolution, India witnessed huge improvement in agricultural production, which was made possible by the adoption of new farming practises, a high yielding variety of seeds, the use of fertilisers, increased irrigation capacity, and the availability of electricity(Chanti, 2017). This accomplishment would not have been possible without the physical and mental efforts of millions of small and marginal farmers. The plan "promotes crop, livestock, and fisheries production strategies, public infrastructure investment, technical progress", and research and extension, all of which have significantly boosted food production and availability(Himani, 2014).The nature of Indian agriculture is steadily pushed by domestic demand, and this trend may intensify in the near future. Since economic reform, agricultural diversity in cropping pattern has primarily been pushed by the commercialization of the farm market(Affairs, 2017).Greater income growth had the most impact on domestic demand, triggering a large-scale demand diversification process. In the consumption baskets of different income categories, a certain quantity of agro-based commodities are required(Schneider et al., 2011). These products aren't only for the privileged.People who are better off drink more milk and consume more eggs, vegetables, fruits, and cheese on a regular basis. This occurred in the 1990s, and the "diversification of the food basket" is now well known. Income growth, taste preferences, and population increase will all have a significant impact on demand(Meuwissen et al., 2018).

The increased population growth estimated at 1.4 billion in 20301, as well as income, providing the foundation for local demand for food grains. Cereal demand has increased by 13% during the last decade(Komarek et al., 2010). On the other hand, demand for "fruits and vegetables, eggs, chicken, and milk" is increasing at a far faster rate. Potatoes have grown by 24 percent over the last decade, vegetables by 30 percent, milk by 40 percent, eggs by 200 percent, and poultry by 250 percent.Demand for "beef, mutton, and pork" rises as well, but for religious reasons, absolute figures remain low(Annika, 2006). The

very robust growth in non-cereal and non-crop agricultural commodity demand offsets the weak growth in cereal demand(Alagh, 2011). Furthermore, there are two opposing viewpoints on the proportional importance of grains in India's future agricultural demand forecasts(Raina, 2011).

The present decade has experienced a change in agricultural commodity prices. It occurred as a result of a food supply shortage and the holding of large traders. In the future, the composition will be dominated by fruits, vegetables, legumes, milk, eggs, chicken, and meat(F AlKhader, 2015). As a result, either an acceleration of growth in the allied sector coupled with agricultural growth beyond the existing 4 percent target rate is required, or an increase in imports is required.With limited land and water resources, agricultural growth must be accelerated. It will be possible by combining organic farming practises with conventional farming methods to achieve sustainable agricultural expansion and meet current demand while keeping soil health and produce quality in mind(Abdurakhmonov, n.d.).

3. Objectives of study

The main objectives of the present study were as follows:

1. To identify the various sector contribution in GDP Indian economy.
2. To identify the role ofvarious sector in GVA of Indian economy.
3. To identify the role of agriculture in GVA of Indian economy.
4. To identify the role of agriculture in total export and import of Indian economy.

4. Research methodology

This study's data was acquired entirely from secondary sources. Secondary data is information obtained by someone other than the original user. Censuses, information gathered by government agencies, organisational records, and data gathered for other research purposes are all popular sources of secondary data for social science. Primary data, on the other hand, is collected by the researcher conducting the study. Secondary data analysis can help you save time that would otherwise be spent acquiring data. In the case of quantitative data, can generate larger and higher-quality databases that a single researcher would be unable to get on their own.

5. Data Analyses

5.1: Contribution to GDP: Sector-wise

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Table-1: GDP contribution sector wise

S.no	Sector	Contribution
1	"Primary (comprising agriculture, forestry, fishing, and mining & quarrying)"	20.19%
2	"Secondary (comprising manufacturing, electricity, gas, water supply etc"	25.92%
3	Tertiary (services) sectors	53.89%

"Source: Directorate General of Foreign Trade, Ministry of Agriculture & Farmers Welfare, Global Trade Atlas"

According to table-1, data represent that in 2017-2018, agricultural in gross domestic product (GDP) has reached nearly 20% for the first time in 17 years, making it the only bright point in GDP performance in 2017-18. The Gross Domestic Product (GDP) of India is a measure of the country's standard of living. It is a collaborative effort involving various industries. Take a look at the contributions made above and the difference these sectors create in the economy as a result of them. Agriculture's contribution to GDP climbed to 19.9% in 2016-17, up from 17.8% in 2017-18. The last time the agriculture sector contributed 20% to GDP was in 2003-04.

5.2: Contribution to GVA: Sector-wise

Table-2: Contribution of various sectors to the GVA of India

Sectors	Constant Prices (INR) in Crores	Share%	Current Prices (INR) in Crores	Share%
Primary Sector	2334723	18.75 %	3908643	21.82 %
Secondary Sector	3359718	26.98 %	4352265	24.29 %
Tertiary Sector	6758989	54.27 %	9654259	53.89 %

"Source: Directorate General of Foreign Trade, Ministry of Agriculture & Farmers Welfare, Global Trade Atlas"

Table-2 shows that the service industry is India's largest sector, with a Gross Value Added of 96.54 lakh crore in 2017-18 at current prices. The service sector now accounts for around 53.89 percent of India's 179.15 lakh crore GVA. Industry comes in second with a contribution of 24.29 percent, while agriculture comes in third with a contribution of 21.82 percent.

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5.3: Agriculture Contribution to GVA

The share of "Agriculture and Allied Sectors in Gross Value Added (GVA)" of the country during the last three years at current prices is given below in table-3, according to the "Provisional Estimates of Annual National Income released by the National Statistical Office (NSO)", "Ministry of Statistics and Programme Implementation" on May 31, 2018.

Table-3: Percentage Share of GVA of Agriculture and Allied sector to Total Economy

S.no	Year	"Percentage Share of GVA of Agriculture and Allied sector to Total Economy (%)"
1	15-16	17.6
2	16-17	18.4
3	17-18	20.2

"Source: National Statistical Office (NSO), M/o Statistics & PI"

"Gross Capital Formation (GCF)" in agriculture and associated sectors at current prices across the last three years (latest available) is shown in table-4.According to the "First Revised Estimates of National Income" for 2017-18 released on January 29, 2018.

Table-4: Gross Capital Formation (GCF) of Agriculture, forestry and fishing at Current Price

S.no	Year	"Gross Capital Formation (GCF) of Agriculture, forestry and fishing at Current Price (□ crore)"
1	15-16	3,62,706
2	16-17	4,07,842
3	17-18	4,46,044

"Source: National Statistical Office (NSO), M/o Statistics & PI".

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Table-4 represent total Agriculture, forestry and fishing at Current Price received during 15-16 (3,62,706), 16-17 (4,07,842), and 17-18 (4,46,044) from agriculture sector are as follows.

5.4: Agriculture contribution in Export and Import

Table-5: Agriculture Export contribution

Year	Total contribution	Contribution %
15-16	33,283.41	33.7
16-17	38,425.52	39.5
17-18	38,739.10	39.4
18 (April-may)	6,001.81	N.A

"Source: Directorate General of Foreign Trade, Ministry of Agriculture & Farmers Welfare, Global Trade Atlas"

Table-5 represent total export contribution received during 15-16 (33,283.41)16-17 (38,425.52), 17-18 (38,739.10) and 18 (April-may)(6,001.81) from agriculture sector are as follows. In percentage it 33.7%, 39.5% and 39.4% are as follows.

Table-6: Agriculture Import contribution

Year	Total contribution	Contribution %
15-16	25,039.64	26.9
16-17	24,303.84	30.2
17-18	20,350.76	24.6
18 (April-may)	3,279.35	N.A

Source: Directorate General of Foreign Trade, Ministry of Agriculture & Farmers Welfare, Global Trade Atlas

Table-6 represent total export contribution received during 15-16 (25,039.64),16-17 (24,303.84), 17-18(20,350.76) and18 (April-may)(3,279.35) from agriculture sector are as follows. In percentage it 26.9%, 30.2% and 24.6% are as follows.

6. Emerging trend in agriculture

Farm robotics-unmanned aerial and terrestrial robots: In large commercial agricultural and animal value chains, farm robots, both autonomous and semi-autonomous, will replace labour-intensive human duties and boredom. India is in the early stages of farm automation, with unmanned vehicles being used mostly for remote sensing (data

collecting) by institutional users at the start of this decade (e.g., revenue department, insurance companies). Although this will continue to be a popular use case, fleet operators and large farmers will start to demand autonomous robots for jobs like weeding, spraying, and harvesting that involve a lot of labour and have a high rate of human error.

IoT sensors and actuators: This decade, farms will go "live," ability to sense and interacting weather, essential minerals, humidity, and crop health as living breathing systems, and we will be able to create electronic of farms, greatly improving our capacity to forecast the effects of interventions virtually before testing them in the real world. In terms of accuracy and detail, remote sensors for sophisticated visual assessment exceed human-assisted assessments. This has far-reaching ramifications for how India investigates soil and agricultural growth. NIS and electrical conductivity (EC) sensors will make traditional soil titration testing obsolete, disclosing the microbiota that lives beneath each plant.

Artificial intelligence in agriculture: Artificial intelligence skills will enable agriculture to be monitored and controlled as a regulated system for the first time in history. By 2030, public and commercial entities are likely to have large volumes of personal and statistical data about farmers and the agricultural sector, thanks to nearly two decades of data collecting via digital services and remote sensors.

India Agristack: Like that of the India Stack, an agristack will be a multi-layer agricultural technology system with location data data on (1) producers: farmers and their financial and asset ownership, (2) assets: farmland, along with soil profile, productivity, and pervasive climate conditions, and (3) stock: market movement and prices. Efforts to collect data at multiple levels are now strewn throughout private agritech companies and government ministries, and they're starting to pay off in small pockets of interventions like loans and insurance.

3rd Gen farmer incorporated companies' enterprises: The majority of smallholder output will be collectivised under professional enterprises, rather than functioning as unregistered and dispersed organisations that currently dominate the terrain. First generation FPOs were basic collectives, similar to SHGs, that were funded by the government and primarily assisted farmers in bargaining for lower input prices when purchased in bulk.

Peer to peer (P2P) learning networks: Rural skill development will experience a major revolution this decade as a result of a changing agricultural landscape. As agricultural skill requirements shift from manual labour to more value-added technology-aided tasks, so will education systems.

Hi-tech fresh produce infrastructure: Cities will have specialised supply chains for high-value fresh food grown in automated systems capable of picking and transporting it on the same day. As standalones or tuck-ins to open field agriculture, entrepreneurial farmers from Indian metros are creating unique poly homes near cities, equipped with changing light sources, light refractors, soil-less growth mediums, and other characteristics**.**

7. Government schemes

"PM-KISAN (Pradhan Mantri Kisan Samman Nidhi) Scheme": This project claims to pay Rs 6,000 per year in three instalments by Direct Bank Transfer to all subsistence farmers (small and marginal farmers with lands of up to 2 hectares). It is expected to assist 14.5 crore farmers across India, according to reports.

"Pradhan Mantri Kisan Pension Yojana": To alleviate hardship in the agriculture sector, the "Modi 2.0 Cabinet" agreed to a plan to reward small and marginal farmers with a monthly fixed pension of at least Rs 3,000, costing the exchequer Rs 10,774.5 crore per year.

"Pradhan Mantri Jan Dhan Yojana": It is a "National Financial Inclusion Mission" with an integrative approach to achieving "comprehensive financial inclusion" and delivering banking services to all families in the country.

"National Mission for Sustainable Agriculture (NMSA)": It focuses on intensive agriculture, water consumption efficiency, soil health management, and resource conservation harmony to improve agricultural output, particularly in rainfed areas.

"Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)": The Indian Government is devoted to making water conservation and management a top priority. To that aim, a plan has been developed with the goal of expanding irrigation capacity. It is a government project to encourage organic farming in the country, was established in 2015 by the "NDA government".

"Pradhan Mantri Fasal Bima Yojana (PMFBY)": It is a "government-sponsored crop insurance programme" that brings together a variety of stakeholders on a unified platform.

This programme aimed to provide farmers and cattle breeders with a means of protecting themselves against the loss of their animals due to death, as well as to demonstrate the benefits of livestock insurance to the general public, with the ultimate goal of improving the quality of livestock and their products.

8. Conclusion

Agricultural development is crucial for the economic growth, rural development, and poverty alleviation of low-income developing countries. Improvements in agricultural productivity are a key driver of economic growth and poverty reduction both inside and beyond the agricultural business.In connection with increase in productivity, suitable infrastructure, well-functioning domestic markets, adequate institutions, and access to proper technologies are all required. Agriculture is the most important contributor to India's GDP.Agriculture contributes around 20.19 percent of the country's GDP. The agricultural sector's contribution has decreased in recent years, despite the fact that it is still the greatest contributor. Agriculture plays a vital role in Indian economics not just because of its contribution to "GDP," but rather because it employs a huge portion of the people. India's agriculture industry, on the other hand, appears to have made great headway toward realising its full potential. The green revolution significantly enhanced the production of critical food grains while also introducing agricultural technical improvements. India's net trade balance reflects this improvement. Whereas India used to rely on imports to feed its people, it has become a net exporter of agri-food products since 1990.Even with its connections with small cities and rural areas, the rural non-farm sector has more potential. This approach can be facilitated by rural development and community-driven development. Many of the responsibilities proposed in this report will necessitate the involvement of the government. Therefore, it should not be the exclusive provider. The private sector will be the primary source of investment funds and a service provider. Investors such as non-governmental organisations (NGOs), and civil society organisations (which benefit from local and foreign private knowledge when implementing initiatives) will also play an important role. It will be critical to determine the optimal balance of these actors and to build successful cooperation among them. Its agriculture is big and diverse, and because of its size, even little changes in its commerce have a significant impact on global agricultural markets.It is critical to train and educate farmers in order to shift their thinking and reposition them to take on new tasks or adopt foreign technology. In this

environment, non-governmental groups must be involved in training and motivating the rural poor to meet the challenge of liberalisation.Furthermore, when it comes to domestic economic changes, more care must be taken to develop state-specific liberalisation policies in order to maximise their benefits. Finally, in the implementation of these reforms for effective globalisation, one critical element that is not totally under control is the requirement for strong governance and political and economic stability.In India, new techniques to increasing production must be developed. Further land expansion to improve agricultural output will be exhausted shortly, and concentration will be the only means to increase productivity in the future. As a result, for its Green Revolution, India need high-yielding varieties that are tailored to local conditions.Furthermore, existing obstacles such as low education, a poor infrastructure, a shortage of credit and insurance markets, and uncertain property rights must be addressed in order to ensure the adoption of such crop types and the integration of small farmers into contemporary value chains. Furthermore, new techniques of information sharing and learning methods, such as the use of communications technology in extension services, might encourage farmer acceptance and profitable production. Increasing productivity among smallholders in underdeveloped nations is also a tool for ensuring long-term food security.As if further evidence were necessary, previous food crisis revealed the poor's sensitivity to financial instability caused by food price rises. As commodity prices rise once more, it is critical to implement measures to prevent volatility and put adequate coping mechanisms in place. Macroeconomic attempts to price stabilisation in national markets are unpromising. Policies that assist the poor in dealing with financial instability, such as social safety nets, have the ability to attenuate negative consequences and keep households from sliding into chronic poverty.The Government of India prioritises poverty reduction through increased agricultural productivity in order to boost agricultural and rural development. To develop a "solid foundation for a highly productive, internationally competitive", and diverse agricultural industry, policymakers will need to take significant action to change away from the current "subsidy-based regime", which is no longer economically viable.

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