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A STUDY ON ROLE OF KARNATAKA AGRICULTURE IN ACHIEVING $5 TRILLION ECONOMY.

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ABSTRACT

Agriculture in Karnataka is the backbone for long-term growth, rural well-being, and economic resilience for the state, and it makes a big contribution to India's drive to be a $5 trillion economy. The state has an ecologically diverse agricultural basket of food grains, horticulture, coffee, sericulture, livestock, and fisheries as the basis for strong rural growth and livelihoods. This research examines the contribution of modernization, adoption of agri-tech, visionary policies of government, and improved export performance in driving productivity, value addition, and increased rural incomes. Important programs, including digital platforms, improved irrigation facilities, and market linkages are discussed as important tools for sectoral development and resilience. The analysis further highlights the serious problems of dispersed ownership, volatile climatic trends, resource scarcity, and market turbulence, which represent deeply rooted challenges to long-term development. Policy interventions are geared towards integrated resolutions through the focus on innovation, infrastructure growth, and inclusive stakeholders' participation in pursuit of developing solutions for overcoming and advancing sectoral competitiveness. The paper concludes that the synergistic growth of Karnataka's agriculture based on technological innovation and quality infrastructure continues to be critical in securing India's overall economic transformation and social equity. The strategy will not only enhance food security and rural employment but also place Karnataka at the forefront of India's agricultural modernization and global competitiveness.

Key words :Agriculture, sericulture, agritech, innovation , inclusive growth

INTRODUCTION

India's plan to achieve a $5 trillion economy by 2026-27 is dependent on all-round sectoral growth with agriculture forming the center of it due to its linkage with livelihood as well as material availability. Being one of the leading agricultural states of India, Karnataka has a

high value addition to state and national GDP and is a pioneer in the field of diversified crops and allied industries (Karnataka Economic Survey, 2023). This paper discusses Karnataka's agriculture's economic contribution, modernization, and strategic role to India's overall growth plans.

Research aims

- To research the overview of Indian agriculture
- To research the role of Indian agriculture towards the economy
- To research the challenges and opportunities for Karnataka's agriculture in the future

Economic Contribution of Karnataka Agriculture

Agriculture accounts for nearly 15% of Karnataka's Gross State Value Added (GSVA) and contributes around ₹1.8 trillion ($21.6 billion) to the state's GSDP, as of 2024 (Statista, 2024; Karnataka Economic Survey, 2023). Karnataka is a key producer of crops including coarse cereals, coffee—70% of India's coffee is produced here, sericulture, and floriculture (Karnataka Economic Survey, 2023). More than 50% of rural Karnataka depend on the sector for employment and rural incomes and therefore it is the highest source of rural income and employment.

Karnataka's agriculture is at the heart of India becoming a $5 trillion economy, leading economic growth, rural growth, and sustainability through its high-value and high-contribution large presence. Karnataka's diversified agro-climatic regions foster high production of foodgrains (rice, maize, ragi, and pulses) and horticultural crops (mangoes, grapes, tomatoes, and spices), ranking Karnataka amongst the country's leading producers at the national level. It is the largest contributor to coffee and silk production and combined, sericulture and horticulture contribute more than one-third of agricultural revenues.

• That agriculture contributes around 13% of Karnataka GSDP as of 2023-24, with the contribution of the sector fluctuating from year to year but forming an important part of the state's economy.

• The gross value of Karnataka agri-sector in 2024 is projected to be 1.8 trillion Indian rupees and indicates consistent growth and pertinence.

•Economic diversification notwithstanding, more than 54% of Karnataka's population remains agrarian-dependent, either directly engaged in agriculture or indirectly engaged in allied activities like processing and logistics.

Review of Literature

Devaraj (2022) provided a detailed analysis of the agricultural sector of Karnataka, focusing on its continued importance to the economy of the state despite a steady decline in its contribution to the Gross State Domestic Product (GSDP). Devaraj's paper emphasizes the extensive employment offered by agriculture and continuing challenges rooted in geographical diversity, drought-prone northern regions, and limitations in resources. The author advises implementing resource-effective and diversified agriculture for improving resilience and sustainability (Devaraj, 2022).

Dkhar and Madaiah (2024) were concerned with the process of modernization among tribal farmers in the Chamrajnagara district in Karnataka state. They constructed and calibrated a multidimensional scale for the measurement of different aspects of modernization, including the use of new technology, market involvement, and changes in family constitutions. Their research shows that though most of the tribal farmers have adopted technical and economic modernization, there remains a significant part practicing tradition on social and cultural bases (Dkhar&Madaiah, 2024).

Ghosh and Sharma (2024) studied the public expenditure contribution to Karnataka farm production and provided empirical support that government spending—largely on irrigation, rural infrastructure, and extension services—increases productivity and rural incomes by considerable margins. They support persistent and targeted fiscal interventions to alleviate inequality and build inclusive growth (Ghosh & Sharma, 2024).

Reddy and Singh (2023) examined Karnataka's agri-path under the framework of Agriculture 4.0, with a focus on the technology-driven transformation role of AI, big data, and precision agriculture. The study illustrates that agri-tech innovation can render farming more efficient and climate-resilient, but they also encounter obstacles in the form of digital illiteracy, poor market integration, and the digital divide among small holders (Reddy & Singh, 2023).

Chandre Gowda and Bindu (2024) studied the impact of technology interventions to enhance farmers' income in North Karnataka. From case studies and field visits, they recorded considerable yield and income diversification through improved seed adoption, mechanization, and post-harvest technology. They also reported, however, the need for ongoing extension support and market integration for long-term gain (Chandre Gowda & Bindu, 2024).

Rani and Kumar (2024) argued insecure rural youth employment in agriculture, identifying structural underemployment, skills gaps, and inadequate entrepreneurship support. The article emphasizes the need for oriented policy and training interventions to engage and sustain young people in agriculture (Rani & Kumar, 2024).

Methodology

This study employs a descriptive and analytical research design, integrating quantitative secondary data analysis with qualitative review of recent scholarly literature. The approach is suited for synthesizing trends, sectoral performance, and policy impacts over the past decade.

Data Sources

Secondary Data:

Official statistics from the Karnataka Economic Survey (2023), Government reports (Annual Report 2022–23), and databases such as Statista and Ministry of Agriculture.

District-wise crop production records, horticulture, export, and employment data compiled from research articles and government documentation

Major Crop Production and Performance (2023–24)

Crop	Area (Lakh Ha)	Production (Lakh Tonnes)
Rice	14.55	45.54
Jowar	7.45	8.52
Ragi	8.12	12.92
Maize	16.14	53.63
Tur	15.81	12.59
Soyabean	4.19	4.77
Cotton	8.16	24.47
Sugarcane	7.38	702.64

Source: Karnataka Economic Survey (2023), Statista (2024)

District-Wise Agriculture Performance (Selected Crops, 2023–24)

District	**Rice (T)**	**Maize (T)**	**Pulses (T)**	**Oilseeds (T)**
Belagavi	1,017,254	53,630	1,142,190	70,318
Davanagere	702,188	193,812	711,023	8,059
Raichuru	1,038,709	284,245	1,177,506	450,757

District	Rice (T)	Maize (T)	Pulses (T)	Oilseeds (T)
Tumkur	340,460	5,107	360,824	6,320

Source: Karnataka State Agriculture Department Annual Report (2022–23)

Northern and central Karnataka districts form the agricultural heartland—producing much of the state's cereals, pulses, and oilseeds.

Raichuru dominates in pulses; Belagavi leads in total cereals and oilseeds.

Horticulture and Allied Sectors

Category	Production/Area	Karnataka Rank
Horticulture area	16,300 km²	3rd/4th
Horticulture output	9.58 mn tonnes	Top tier
Mango (2025)	1,544,447 tonnes	2nd/3rd
Coffee (2023–24 est.)	~230,000 tonnes	1st
Floriculture Value	₹500 mn	2nd

Source: Karnataka Economic Survey (2023), Karnataka Silk Industries Corporation (2021)

Horticulture contributes >40% of the state's agricultural income, with Karnataka among national leaders in mango, coffee, fruit, and flower production.

Coffee and horticultural crops diversify rural incomes, buffer agri-economic shocks, and drive international exports.

Exports and Employment

Item	Export Value (₹ bn)	Karnataka Share
Agri/Processed Products	~225	5% of India
Coffee	~60	70% national
Spices, silk, marine	~30	Top 3

Agriculture and allied sectors employ over 54% of Karnataka's workforce, especially in rural districts.

Coffee, spices, floriculture, and processed foods are critical for export earnings, with Karnataka holding top-3 national positions for most of these commodities.

Trends and Insights

• Absolute value of agriculture GSDP is increasing steadily, but relative share is declining because industrial and service sector development is happening with a fast growth rate.

• There are productivity differentials: cash crops (sugarcane, cotton) and irrigated cereals (maize, rice) are more productive than the rainfed crops (jowar, bajra), indicating the need for irrigation and technological outlay.

• Northern Karnataka is the dominant agri-producer owing to superior irrigation and large-scale cultivation, whereas southern tracts concentrate on horticulture and high-value produce

Supporting industries such as livestock and fisheries create substantial rural employment and incomes. Karnataka possesses almost 3 crore livestock and more than 5 crore poultry, is the second highest milk producing state, and features a marine produce of 3.93 lakh tonnes every year. Modernization process is in progress with use of agri-tech, specific governmental initiatives, and acceptable export performance, with programs such as sector-specific incentives, food parks, and acceptable market linkages improving value addition and international competitiveness

Key Agricultural Challenges

Modernization and Technological Adoption

Scholarly advisors refer to modernization as the core of the state's agricultural growth. Dkhar et al. (2024) constructed a scale to measure modernization among Karnataka's tribal farmers, referring to how technology adoption has a direct impact on improving livelihood and well-being. As reported in a 2023 study, Agriculture 4.0 driven by artificial intelligence (AI), robotics, and information and communication technology (ICT) is increasingly growing farmer awareness and productivity in Karnataka. However, constrained digital literacy and investment horizon are still bottlenecks, particularly in the case of smallholders.

Impact of Government Policy and Public Expenditure

Current research underlines the necessity of strategic intervention on the government's part. Empirical estimations confirm that enhanced public spending, especially on agri-allied industries, significantly increases sectoral value addition as well as overall economic growth. New generation government initiatives like AI-based Agri Service Centres and development of digital infrastructure are enhancing farmers' access to resources, market linkages, and decision-making throughout the state.

E-Governance and Institutional Challenges

The emergence of e-governance has resulted in efficient delivery, contained inefficiency and corruption, and enhanced transparency and accountability in rural Karnataka. Discontinuity in

the delivery systems and farmers' ignorance are still on the same level, which requires that institutional support is made stronger.

Critical Sectoral Challenges

Scholars collectively identify problems with recurring patterns: sporadic rains and water shortages, soil erosion, broken landholdings, poor post-harvest infrastructure, restricted credit facilities, and agrarian stress like suicides by farmers. Complete solutions in the form of a combination of upgradation of infrastructure, climate-resilient practices, and facilitating support to the marginal farmers must tackle these issues.

Climate and Water-Related Issues

•Unpredictable rainfalls, regular droughts, and delayed monsoon onset negatively affect agriculture calendars and yield loss, particularly in arecanut-susceptible crops.

•Inadequate irrigation facilities and climate change exacerbate water scarcity and enhance the risk of crop damage in drought-prone regions.

Land, Soil, and Resource Issues

•Soil erosion due to prolonged monoculture and excessive application of fertilizers reduce productivity in the long run.

• Fragmentation of small landholdings discourages mechanization and good cultivation, resulting in wastage of inputs and low per capita productivity.

Technology and Support Deficits

• There are marginal and low degrees of mechanization in most regions, and small and marginal farmers utilize human labor and traditional implements that constrain productivity.

• Inadequate availability of improved seeds, credit, and farm extension services constrains rural farmers' use of improved practices.

•Lack of information regarding government schemes and technical know-how keeps the majority of farmers from availing support programmes.

Market and Infrastructure Barriers

•Market volatility, farmgate prices that are low, and distress selling are common because of the absence of sufficient marketing infrastructure and reliance on intermediaries.

•Shortage of post-harvest storage, transportation, and processing infrastructure heightens losses and reduces farmers' returns

Credit and Institutional Limitations

•Access to cheap credit is still out of reach for most, compelling them to turn to usurious interest rates of moneylenders, which results in farmer indebtedness and distress sales.

•With no institutional strength and inefficient delivery mechanisms for schemes, agriculture growth is being hampered.

Socio-Economic Issues beyond

• Farmer suicides and income stagnation are being associated with chronic agrarian distress, especially in drought-hit areas.

• Migration to cities depletes the pool of rural labor, affecting on-time farm work.

• Insufficient education and entrepreneurship support constrain agripreneurship development and diversification of agriculture in Karnataka.

Addressing these interrelated issues necessitates concerted policy measures, enhanced infrastructure, climate-resilient agriculture, and more institutional support for achieving sustainability and prosperity in Karnataka's farm sector

Policy recommendations

Innovation synergy: Enhance mechanization, irrigation, and digital agri-services for balanced productivity.

Enhanced infrastructure: Increase storage, transport, and market linkages to prevent post-harvest losses.

Inclusive growth: Facilitate women, rural youth, and smallholders as agripreneurs and value chain linkage.

Climate-smart practices: Invest in crop diversification, drought-tolerant varieties, and watershed management.

Strengthen institutions: Foster awareness generation and implementation of government programs, credit, and technology support.

CONCLUSION

Synergistic growth—innovative technology, robust infrastructure, and inclusiveness policies—will propel Karnataka's agriculture sector towards sustainable development and increased national competitiveness. It is this integrated approach that is central to food security, rural prosperity, and social justice, and hence, Karnataka leads India's agricultural modernization.

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