An Economic Analysis of Factors Influence on Profitability in Poultry Farming in Karnataka

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ABSTRACT:

Poultry farming has become one of the fastest-growing agricultural sectors in India, significantly contributing to rural livelihoods, employment, and the availability of animal protein. In Karnataka, it plays a vital role in the rural economy, providing income and nutrition to small and medium-scale farmers. This study investigates the impact of selected economic and management factors on profit per bird among 60 poultry farms in Mysore District using an empirical farm-level approach. The study concludes that economic efficiency, feed management, and bio-security are the major drivers of profitability in poultry farming, while structural and minor cost factors play a limited role, providing actionable insights for farmers and policymakers.

KEYWORDS:

Poultry Farming, Profitability, Economic, Management Factors.

Introduction

Poultry farming has emerged as one of the most important and rapidly growing sectors of agriculture in India, contributing significantly to rural livelihoods, employment, and the availability of animal protein. In Karnataka, poultry farming plays a pivotal role in the rural economy, providing both income and nutrition to small and medium-scale farmers. The sector has witnessed considerable transformation due to modernization, adoption of scientific management practices, and increasing demand for poultry products in urban and semi-urban markets. Despite its growth, poultry farming profitability is influenced by a complex interplay of economic and management factors, including farm size, feed costs, day-old chick (DOC) costs, feed conversion ratio, mortality rates, biosecurity measures, labor and electricity costs, and medicine expenditures. Understanding the relative impact of these factors is essential for optimizing farm management, enhancing productivity, and ensuring sustainable profitability.

Poultry farming

Poultry farming is the practice of raising domesticated birds such as chickens, ducks, turkeys, and quails primarily for the production of meat, eggs, and other by–products. It is a significant branch of animal husbandry that focuses on the breeding, rearing, and management of poultry under controlled conditions to maximize productivity and profitability. The main objectives of poultry farming include egg production for consumption or hatching, meat production to meet the growing demand for poultry meat, and the collection of by–products such as feathers and manure, which have commercial value. Poultry farming can be classified into backyard or small–scale operations, primarily serving household needs and local markets, and commercial large–scale operations that employ scientific management practices to supply urban and regional markets. Overall, poultry farming is a profitable and sustainable agricultural activity that generates employment, contributes to food security, and provides essential animal protein, making it an important component of rural and national economies.

Poultry farming plays a vital role in rural India, contributing significantly to livelihoods, income generation, and nutritional security. It provides a steady source of income for small and marginal farmers, women, and landless laborers, often requiring lower capital investment compared to other livestock enterprises. The sector offers employment opportunities at multiple levels, including farming, feed production, hatcheries, transport, and marketing, thereby supporting rural economies. Poultry products, such as eggs and meat, are rich sources of animal protein, vitamins, and minerals, helping combat malnutrition in rural populations. The sector also promotes women's empowerment, as women often manage backyard or small–scale poultry units, gaining financial independence. With modernization, adoption of scientific rearing practices, and government support programs, poultry farming has become more profitable and scalable, contributing to rural development. Additionally, it diversifies household income, reduces dependence on traditional crops, and provides a buffer against economic shocks, making it an essential component of sustainable agriculture in India.

Factors Influencing Profitability in Poultry Farming

Profitability in poultry farming is determined by a combination of economic, management, and biological factors, which collectively

influence both revenue and production costs. Understanding these factors helps farmers optimize production efficiency and enhance financial returns.

Farm Size: The scale of operation significantly affects profitability. Larger farms often benefit from economies of scale, as fixed costs like housing, equipment, and management are spread over more birds, reducing per-unit costs. Small-scale farms may have higher relative costs but can be more flexible in adopting specialized or niche production strategies.

Average Weight of Birds: The weight of birds at market directly determines revenue. Birds with higher body weight usually fetch better market prices, increasing income per bird. Proper feeding, nutrition, and management practices are critical to achieving optimal growth rates without escalating costs.

Market Price of Birds: Poultry profitability is sensitive to fluctuations in market prices, which are influenced by demand-supply dynamics, seasonality, and consumer preferences. A sudden drop in market price can reduce margins, even if production costs remain stable.

Feed Price: Feed constitutes the largest share of production costs (often 60–70%). Increases in feed prices significantly impact net profit. Efficient feed management, including the use of balanced rations and locally available feed ingredients, can reduce cost while maintaining growth performance.

Feed Conversion Ratio (FCR): FCR measures the efficiency of converting feed into body weight. A lower FCR indicates better efficiency, reducing feed cost per kilogram of weight gain, thereby enhancing profitability. Poor FCR increases costs and reduces returns.

Day-Old Chick (DOC) Cost: DOCs are the initial investment in poultry production. High-quality chicks are essential for achieving good growth and low mortality. Although higher-quality DOCs may cost more, they usually result in better growth rates and lower mortality, improving net returns.

Mortality Rate: Mortality reduces output and directly impacts profit. High mortality is often due to disease outbreaks, poor management, or inadequate biosecurity. Reducing mortality through vaccination, hygiene, and proper management is crucial for sustaining profitability.

Bio–security Score: Effective bio–security measures–such as sanitation, controlled access, and disease prevention protocols–minimize disease risks and mortality. Farms with higher bio–security scores tend to have more stable production and lower medical costs, directly improving profit margins.

Labour Cost: Labour represents a significant operational expense. Efficient labor management, including appropriate staffing, mechanization, and training, can reduce unnecessary costs and improve operational efficiency.

Electricity and Medicine Costs: Electricity is required for lighting, ventilation, and water systems. Medicine costs cover preventive and therapeutic treatments. Controlling these costs through efficient energy use and proper health management ensures that input costs do not erode profit margins.

Management Practices: Beyond costs and inputs, overall management–including record–keeping, farm planning, feed scheduling, and vaccination protocols–plays a critical role in maintaining production efficiency and ensuring profitability.

External Factors: Environmental conditions, market access, government policies, and availability of inputs also influence profitability. Farmers who can adapt to market and environmental changes are more likely to sustain profitable operations.

In summary, profitability in poultry farming is not determined by a single factor but by the interplay of biological efficiency, cost management, market dynamics, and farm–level management practices. An integrated approach addressing all these factors is essential for maximizing returns and ensuring the long–term sustainability of poultry enterprises.

Objectives of the Study

1. To study the growth trend and dynamics in Poultry Industry in India.
2. To analyse selected economic and management factors how significantly influence the profit per bird among poultry farms in study area.

Poultry Industry in India

The poultry industry in India is one of the fastest–growing segments of the agricultural sector and plays a vital role in the country's food

economy. It has transformed from a backyard, unorganized practice into a vibrant, commercial, and technology–driven agribusiness over the past few decades. According to the Food and Agriculture Organization Corporate Statistical Database (FAOSTAT, 2020), India ranks third globally in egg production and eighth in total meat production. Egg production has surged from 78. 48 billion in 2014–15 to 129. 60 billion in 2021–22, while meat production increased from 6. 69 million tonnes to 9. 29 million tonnes during the same period. Broiler meat production alone contributes around 5 million tonnes annually, underscoring the dominance of poultry meat in India's total meat output.

In 2022, India's poultry feed production reached approximately 27 million metric tonnes per year, reflecting the scale and intensity of modern poultry farming. The sector has recorded a consistent annual growth rate of about 8% in poultry meat and 7. 45% in egg production between 2014–15 and 2021–22. The Indian poultry market, valued at Rs. 2, 099. 2 billion in 2023, is expected to grow at a compound annual growth rate (CAGR) of 8. 9% from 2024 to 2032, driven by rising protein demand, urbanization, changing dietary habits, and technological advancements in breeding and feed management.

Moreover, India has established a strong foothold in global trade, exporting poultry and poultry products to 64 countries and earning USD 134 million in 2022–23. The industry provides significant employment opportunities–directly to millions of farmers and indirectly through allied sectors such as feed manufacturing, logistics, and processing. Despite its impressive growth, challenges such as feed cost volatility, disease outbreaks, and market fluctuations remain key concerns. Nevertheless, with government support, scientific management, and export potential, India's poultry sector continues to emerge as a crucial driver of rural income and nutritional security.

Table 1: Year–wise Poultry Production in India (2014–15 to 2021–22)

Year	Egg Production (Billion Nos.)	% Growth in Egg Production	Meat Production (Million Tonnes)	% Growth in Meat Production
2014–15	78. 48	–	6. 69	–

2015–16	82. 93	5. 66%	7. 01	4. 78%
2016–17	88. 14	6. 28%	7. 43	5. 99%
2017–18	95. 22	8. 04%	7. 70	3. 63%
2018–19	103. 32	8. 49%	8. 11	5. 32%
2019–20	114. 38	10. 70%	8. 60	6. 04%
2020–21	122. 05	6. 70%	8. 80	2. 32%
2021–22	129. 60	6. 19%	9. 29	5. 57%
CAGR	—	7. 45%	—	8. 00%

Source: DAHD Annual Report 2014–15 to 2021–22

Table 2: Supplementary Poultry Sector Indicators (as of 2022–23)

Indicator	Value
Broiler Meat Production	~5. 0 Million Tonnes
Poultry Feed Production	27 Million Metric Tonnes
Poultry Market Size (2023)	Rs. 2, 099. 2 Billion
Projected CAGR (2024–2032)	8. 9%
Poultry Exports (2022–23)	USD 134 Million (64 Countries)

Source: All India Poultry Breeders Association (AIPBA, 2022 to 2023)

The data clearly indicates a steady and robust growth trend in India's poultry industry between 2014–15 and 2021–22.

- Egg production increased from 78. 48 billion to 129. 60 billion, representing a 64% overall increase and a compound annual growth rate (CAGR) of 7. 45%. This consistent upward trend reflects improved layer management practices, the adoption of high–yielding breeds, and rising domestic demand for affordable animal protein.
- Meat production also exhibited remarkable growth, rising from 6. 69 million tonnes to 9. 29 million tonnes, achieving a CAGR of around 8%. The growth is primarily driven by the expansion of commercial broiler farming, integration of production chains, and rising consumer preference for poultry meat due to its affordability and nutritional value.
- The poultry feed industry, producing 27 million metric tonnes annually, shows strong backward linkages with the poultry sector,

supporting both broiler and layer production systems.

- The market valuation of Rs. 2, 099. 2 billion in 2023, along with an expected CAGR of 8. 9% (2024–2032), indicates sustained profitability and expansion potential for investors and farmers alike.
- On the export front, India's poultry industry is gradually expanding its global presence, exporting to 64 countries and earning USD 134 million in 2022–23, which underscores the international competitiveness of Indian poultry products.

Overall, the interpretation highlights that India's poultry sector has shown resilient, technology–driven, and demand–led growth, making it a key contributor to rural livelihoods, employment, and national nutritional security. The sustained increase in both egg and meat output reflects not only economic growth but also the successful modernization of the Indian livestock industry.

Table 3: Major Species wise Meat Production in India from 2019–20 to 2023–24

Sl. No	Species	2019–20	2020–21	2021–25	2022–23	2023–24
1.	Poultry	50. 06	50. 84	51. 44	51	48. 96
2.	Buffalo	19. 05	17. 97	17. 49	18	18. 09
3.	Goat	13. 35	13. 78	13. 63	14	15. 50
4.	Sheep	8. 36	10. 04	10. 33	11	11. 13
5.	Pig	4. 98	4. 06	3. 93	4	3. 72
6.	Cattle	4. 02	3. 31	3. 18	2	2. 60

The species–wise meat production data in India from 2019–20 to 2023–24 shows notable shifts in the composition of the livestock sector. Poultry remains the dominant contributor, accounting for nearly half of the total meat production, with its share peaking at 51. 44% in 2021–22 before slightly declining to 48. 96% in 2023–24. This minor decline may be attributed to increased feed costs, disease outbreaks, and market corrections post–pandemic. Buffalo meat consistently holds the second position, contributing around 17–19% of total meat output, supported by strong export demand, particularly from Middle Eastern and Southeast Asian countries. Goat and sheep meat production have shown steady growth, with goat meat increasing from 13. 35% to 15. 50% and sheep meat

from 8. 36% to 11. 13%, reflecting rising consumer demand and the growing significance of small ruminant farming in rural areas. In contrast, pig and cattle meat production have declined, with pigs falling from 4. 98% to 3. 72% due to disease and limited organized markets, while cattle meat decreased from 4. 02% to 2. 60% owing to policy restrictions. Overall, the data indicates a structural transformation in India's meat sector, with poultry and small ruminants driving growth, diversification, and rural economic development.

Table 4: Poultry Population in India

Year	Censes	Population in million birds
2007	18th censes	649
2012	19th censes	729. 2
2019	20th censes	851. 81

Source: DAHD Livestock Census Reports (2007, 2012, 2019)

The data on poultry population in India, as per the Livestock Census conducted by the Department of Animal Husbandry and Dairying, reveals a consistent and significant increase over the years. The poultry population grew from 649 million birds in 2007 to 729. 2 million in 2012, showing a growth of about 12. 35% during this period. The upward trend continued, reaching 851. 81 million birds in 2019, representing an overall growth of 31. 26% over 12 years. This steady expansion reflects the rapid commercialization and modernization of the poultry industry in India. The increase in population can be attributed to factors such as the adoption of improved breeds, expansion of organized broiler and layer farms, enhanced feed and healthcare practices, and growing consumer demand for eggs and poultry meat. Government initiatives like the National Livestock Mission and Poultry Development Program have also contributed to this growth by providing financial and technical support to farmers. The rising poultry population not only indicates the sector's robust performance but also highlights its role in employment generation, nutritional security, and contribution to agricultural GDP. This sustained growth positions poultry as one of the most dynamic components of India's livestock economy.

Table 5: Distribution of Factor Influenced to Involved in Poultry Farming

Characteristics		Respondents	Percentage	Rank
Distribution of Gender	Male	56	93. 33	01
	Female	04	6. 67	02
Distribution of Age	25 to 30	05	8. 33	04
	30 to 35	17	28. 33	02
	35 to 40	30	50. 00	01
	40 and above	08	13. 33	03
Qualification	Illiterate	02	3. 33	04
	Primary and Higher Primary	08	13. 33	03
	PUC	24	40. 00	02
	Degree and above	26	43. 33	01
Occupation	Poultry Farming and Agriculture	34	56. 67	01
	Poultry Farming and Business	15	25. 00	02
	Poultry Farming and Service	05	8. 33	04
	Only Poultry Farming	06	10. 00	03
Poultry Farming Size	Up to 1000	07	11. 67	05
	1000 to 2000	10	16. 67	04
	2000 to 3000	16	26. 67	01
	3000 to 4000	14	23. 33	02
	4000 and above	13	21. 67	03
Years of experience in Poultry Farming	Up to 10 years	30	50. 00	01
	10 to 15 years	20	33. 33	02
	15 to 20 years	10	16. 67	03

Distribution of Household Income	Less than 2. 5 lakhs	04	6. 67	04
	2. 5 to 5 lakhs	24	40. 00	01
	5 to 7. 5 lakhs	22	36. 67	02
	7. 5 to 10 lakhs	08	13. 33	03
	10 and above	02	3. 33	05
Share of Income from Poultry Farming	Less than 2. 5 lakhs	14	23. 33	02
	2. 5 to 5 lakhs	26	43. 33	01
	5 to 7. 5 lakhs	12	20. 00	03
		08	13. 33	04

Source: field survey

Conclusion

Poultry farming has emerged as one of the fastest-growing sectors of agriculture in India, significantly contributing to rural livelihoods, employment, and the availability of animal protein. In Karnataka, the sector plays a pivotal role in the rural economy, providing income and nutrition to small and medium-scale farmers. The industry has undergone considerable transformation through modernization, adoption of scientific management practices, and increasing demand for poultry products in urban and semi-urban markets. Results revealed that Market Price (β_1 = +1. 0969, p = 0. 000) positively and significantly influences profit, contributing 20–25% to profit variability; Feed Price (β_3 = –1. 9209, p = 0. 000) negatively affects profit, accounting for 15–20% of variation; Feed Conversion Ratio (FCR, β_4 = –26. 3518, p = 0. 033) markedly reduces profit, explaining nearly 25% of variability; and Biosecurity Score (β_7 = +6. 418, p = 0. 000) significantly enhances profit by 6. 4 units, contributing 15–20% to overall profit variation. Conversely, Average Weight, DOC Cost, Mortality Rate, Labour Cost, and Farm Size were statistically insignificant. Hypothesis testing at the 5% level confirms that only Market Price, Feed Price, FCR, and Bio-security Score significantly determine profitability, emphasizing that economic efficiency, feed management, and bio-security are the primary drivers of profit, while structural and minor cost factors play a limited role.

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The Authors have no conflict of interest to declare that they are relevant to the content of this article.