



A STUDY ON MARKET DEPENDENCE AND SEASONAL DEMAND FLUCTUATIONS AMONG DUCK FARMERS IN KERALA WITH SPECIAL REFERENCE TO KOTTAYAM DISTRICT

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Abstract: Duck farming plays an important role in supporting small and marginal farmers in Kerala. However, the sector remains highly exposed to market-related risks that affect income stability of farmers. This study aims to analyze the extent of market dependence and seasonal demand fluctuations in duck farming and analyses the challenges arising from these factors. The study was conducted in Kottayam district of Kerala. A total of 50 duck farmers were selected using the simple random sampling method for the study. Primary data were collected through a structured interview schedule and secondary data were collected from government reports and relevant academic studies. The findings of the study reveal that dependence on intermediaries, limited access to markets and uneven income from seasonal demand increase farmers' vulnerability to market risks. To strengthen the efficiency of the sector, the study suggests strategies targeted at improvement of market access, strengthening of cooperative marketing, promotion of seasonal market planning, and enhancement of financial support to duck farmers.

Keywords: Duck farming, Duck farmers, Farming, Market dependence, Seasonal demand fluctuations.

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INTRODUCTION

The agriculture sector is the backbone of an economy and it is the basic source of food supply of all the countries of the world. The agricultural sector plays an important role in the growth of a developing economy. In virtually all underdeveloped economies, agriculture is an existing industry of major proportions, frequently the only existing industry of any consequence (Johnston & Mellor, 1961). Additionally, the data shows, around 40% to 50% of the national income of these countries is contributed by the agricultural sector and 50% to 80% of the labour force is engaged in agricultural production. Although large quantities of resources are being used at very low levels of productivity (Johnston & Mellor, 1961). Economic development of a nation is characterized by an increase in the demand for agricultural products. In addition to the increase of consumer demand, the expansion of agricultural outputs can be marked as an important source of income for a nation. Due to heavy pressure of population in underdeveloped and developing countries and its rapid increase, the demand for food is

increasing at a fast rate (Aravintha Prasanth & Sivanantha, 2021). So, failure of a country to expand agricultural production in pace with increasing demand for food products can be a serious challenge.

The global population is expected to reach nine and half billion by the year 2030. So developing and underdeveloped nations will be forced to increase their agricultural production. Besides this increasing population rate, peoples' migration from rural to urban areas for a better standard of life has put a question mark for the use of limited resources. So this will create some sustainability risks for all nations and further raise the need for sustainable agriculture production and land management. Modern agriculture is facing an array of challenges that include climate change, soil management, maintaining the crop and the increasing soil biodiversity of the world (Suchithkumar et al., 2024). The intricate relationship between agriculture and food security underscores the importance of sustainable agricultural practices that enhance productivity, conserve natural resources, and protect ecosystems (Islam, 2025). However, modern agriculture faces multifaceted

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challenges, including climate change, land degradation, water scarcity, and socioeconomic inequalities, which collectively threaten its ability to meet the growing global demand for food (Godfray et al., 2010).

In this context, the importance of the livestock sector can't be ignored. Interestingly, 12% of the world's population depends solely on livestock for its livelihood (FAO, 1996). Livestock provides major additional contributions to agriculture through draft power, manure, fuel, and fertilizer, as well as animal products such as meat, milk, and eggs, while poultry provides daily cash income and essential nutrition to farmers (Udhaya Nandhini & Suganthi, 2018). It is evident that the sector not only creates income for small and marginal farmers, but also has the capacity to reduce risks arising from crop failures when it is used in mixed farming. Over the past 20 years, cereal production in developing countries has increased by 78% and fish production by 113% while meat production has risen by 127% and egg production by 331% (FAO, 1996). Even so, many people in developing countries cannot afford animal products, as a result of which per capita consumption of meat is only 17.7 kg/year compared to 81.6 kg/year in developed countries. About 60% of dietary protein is from animal products in developed countries, compared to only 22% in developing countries (FAO, 1996). The statistics show the strength and growth potential of the livestock industry in a nation.

Within the livestock industry, the poultry sector is one of the fastest-growing sectors of agriculture. In India, the poultry sector plays an important role in generating employment opportunities for rural farmers. Commercial poultry production is one of the most vibrant and innovative industries in India and additionally, chicken farming is gaining attention as a source of animal protein. One of the advantages of chicken meat is that it is a source of high-quality protein. This element is essential for muscle synthesis, tissue repair, and enzymatic functions of the human body. Proteins in chicken are composed of essential amino acids that the body cannot synthesize on its own, making dietary intake necessary (Debbarma et al., 2024). Chicken meat is an important source of B vitamins, particularly niacin (B3), pyridoxine (B6), and cobalamin (B12). These vitamins are crucial for energy metabolism and neurotransmitter synthesis. Chicken meat can be enriched with several other important nutrients and it is a converter of nutritionally poor feedstuffs into high quality meat and egg.

Now, the poultry industry in India is one of the fastest growing agricultural sectors and becoming a dynamic agri-based industry in productivity and quality. The poultry industry, with the strength of 230 million layers and 3,500 million broilers, employs 5 million persons and contributes over ₹1,20,000 crores to GNP (Panda et al., 2019). The popularity of poultry meat is on the rise during the last three decades and is presently accounting for more than half of the total meat consumed in the country (Panda et al., 2019). As per the 20th Livestock Census, India's poultry population stands at an estimated 851.81 million, indicating the sector's vast scale and national relevance. Within this, around 32.22% comes from backyard poultry, reflecting the importance of small-scale, household-based poultry farming in rural areas. As of 2024, the industry reached a market size of approximately USD 30.46 billion and is projected to grow at a compound annual growth rate (CAGR) of 8.10% over the next decade (Seva, 2025).

Within the poultry industry, duck farming is very popular among small holder farmers. Because of its popularity, duck farming plays an important role in India's poultry sector. The sector produces around 6-7% of the country's total eggs and according to the 20th Livestock Census (2019), ducks make up 4% of India's overall poultry population. The states like West Bengal, Assam, Jharkhand, Kerala, Manipur, Bihar, Tripura, Odisha, and Tamil Nadu account for the majority of duck production in the country (Panda et al., 2022). Compared to other poultry birds, ducks are better adapted to the free range system of rearing. Consequently, they are considered as a medium for alleviating poverty among rural communities and tribes in our country.

Compared to chickens, ducks are tougher and require less attention. They are larger than chickens. So if they are reared for meat, they should be reared on a large scale. Ducks are water birds and need a lot of water for them to grow well. They can easily cope with different climate conditions and they are resistant to most poultry diseases. These birds are excellent foragers and, when allowed to scavenge, can consume enough natural feed to cover most of their daily requirements (Kabir, 2022). Duck can be reared at low cost because they require weeds, fishes, snails, insects, and fallen grains from the surroundings as food. Under assimilated duck farming with rice cultivation, ducks perform four essential functions - interploughing while searching for food, loosening the soil around rice plants (weeding), insect control, and fertilization (Srikanth et al., 2018). Duck meat is enriched with nutrition which can increase the immunity system of the human body. Duck meat is flavorful and contains a high amount of amino acids as well as polyunsaturated fatty acids but a low content of fat (Assawatheptawee et al., 2022).

Marketing is the backbone of the success of any enterprise and the agricultural sector is the same. Agricultural marketing connotes a series of activities involved in the movement of goods, i.e., farm inputs, from the point of production to the point of consumption (Chakki, 2015). Agricultural marketing involves the movement of an agricultural product from farm to the consumer. So, the success of marketing of a product depends on careful planning, organizing and directing in such a way as to satisfy farmers, intermediaries and consumers. Agricultural marketing is the performance of all business activities included in follow of products from the beginning of agricultural production until they are in the hands of consumer (Fernandez & Jakati, 2024).

Marketing brings farmers and consumers together and it stimulates economic growth of a nation. However marketing is equally important as the production. Agricultural activities do not end with production alone. In the end, marketing techniques determine the income of the farmers. Marketing helps generate revenue by establishing fair business processes and clear pricing structures (Mishra & Srivastava, 2024). But, for small and marginal farmers, access to markets is limited. So they had to depend on local market intermediaries for the sale of produce. This weakens their income and profit and leaves them vulnerable to market risks.

Price is a powerful tool that can either drive or disrupt a company's operating margins. Pricing strategies are the methods and processes companies use to determine what they will charge for their products and services (Gao, 2023). In the context of the agricultural sector, the stable price of agricultural output determines the profit of farmers. But, the fluctuation in prices of

agricultural products increases the uncertainty of farmers’ income and the difficulty of production decisions (Tong, 2012).

Volatility represents how much and how fast a value, such as the price of a commodity, changes over time (Petre et al., 2022). In economic theory, volatility encompasses two main concepts: variability and uncertainty. Variability means the general movement and uncertainty means unpredictable movement. The changes in price can occur due to changes in market demand and supply. But in the agricultural market, price fluctuations can happen because of the climatic environment, the level of direct expenditure and input prices, and seasonality. Seasonal demand patterns shape farm incomes. Consumption of certain agricultural products is closely connected to festive seasons and consumption cycles. This results in increases and declines in demand. In duck farming, demand tends to rise during specific festive occasions. This type of seasonality leads to fluctuations in prices and sales volumes. Sometimes this uneven income distribution causes uncertainty in the profit of farmers.

STATEMENT OF THE PROBLEM

In Kerala, duck farming plays a significant role in the growth of rural agricultural economy. It provides both primary and supplementary income to many small and marginal farmers. The sector contributes to household nutritional security and offers livelihood opportunities for rural people. Despite its significance, duck farming remains highly exposed to market-related risks. In this context, it becomes essential to examine the nature of market dependence and seasonal demand fluctuations in duck farming and to assess how these factors influence the economic resilience of farmers.

OBJECTIVES

The main objectives of the study are the following:

1. To analyse the extent of market dependence among duck farmers in Kottayam district.
2. To examine the role of seasonal demand fluctuations in shaping market risks faced by duck farmers in Kottayam district.
3. To identify the challenges arising from market dependence and seasonal demand fluctuations in duck farming and propose policy interventions to strengthen the sector.

METHODOLOGY

The study was conducted in Kottayam district of Kerala. Using a random sampling method, a total of 50 duck farmers were selected as respondents. The study is based on both primary and secondary data sources. Primary data were collected through a structured interview schedule and secondary data were obtained from government reports, published research articles, and other relevant academic literature.

RESULTS AND DISCUSSION

The extent of market dependence among duck farmers

A middleman plays the role of an intermediary in a distribution or transaction chain who facilitates interaction between the involved parties (Uplaonkar & Biradar, 2020, p. 3315). Middlemen can be classified into two categories as merchants and agents. Merchants buy and re-sell their goods and agents specialize in negotiations of selling or buying transactions. Market access and the choice of distribution channels are critical determinants of profitability of farmers. The presence of middlemen in the value chain influences their pricing power, market reach, and vulnerability to market fluctuations. Table 1 presents the distribution channels adopted by duck farmers in the study area.

Table 1 : Distribution Channels

Distribution Channels	Percentage of Respondents
Direct to Consumers	36
Through Middlemen	32
Combination of Both Consumers and Middlemen	32

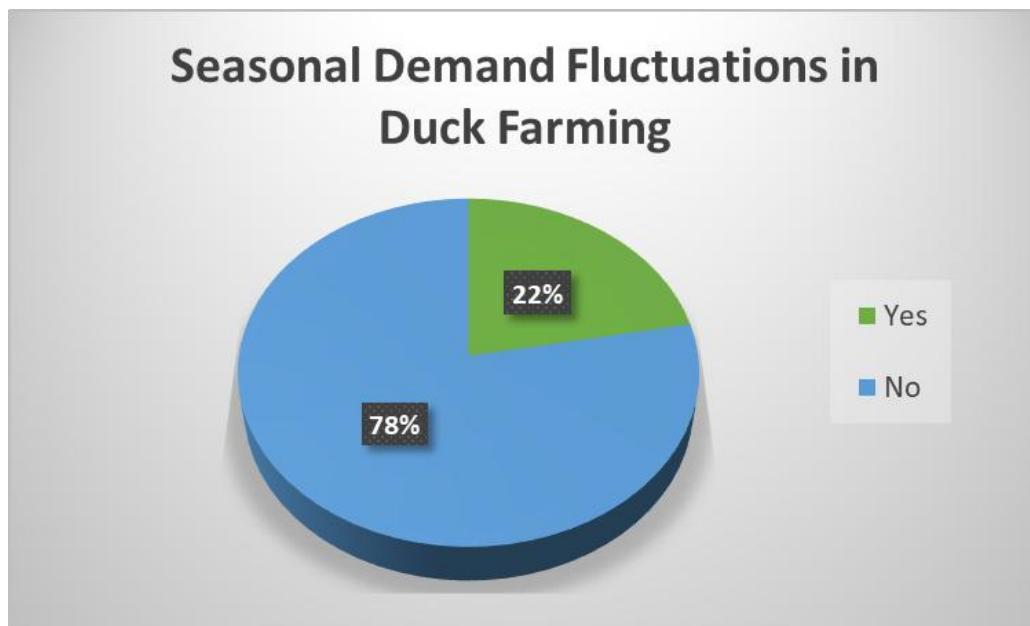
Source: Primary Data

The findings show that 36% of duck farmers sell their products directly to consumers. In this way, they are able to maintain closer customer relationships and exercise greater control over pricing. However, nearly one-third of the respondents (32%) depend exclusively on middlemen for market access. This can be due to limited direct market opportunities or lack of alternative sales channels. However, 32% of farmers adopt a hybrid approach by combining direct sales with intermediary-based marketing. This is an adaptive strategy aimed at expanding market reach and stabilizing income.

The role of seasonal demand fluctuations in shaping market risks faced by duck farmers

The price volatility in agricultural commodities is a major concern for value chain actors, including policymakers (Yeasin et al., 2023). The price fluctuations around a smooth and well-established trend, representing market fundamentals, do not pose much risk, but unpredictable and large price variations cause uncertainty for all the stakeholders in the value chain and agricultural markets are characterized by such uncertain price movements (Yeasin et al., 2023). However, the duck farming sector also witnesses price fluctuations because of seasonality. Seasonal fluctuations in market demand play an important role in shaping income levels in duck farming. The extent of seasonal demand fluctuations is presented in Figure 1.

Figure 1: Seasonal Demand Fluctuations in Duck Farming



Source: Primary Data

The findings reveal that only 22% of the duck farmers reported experiencing significant seasonal demand volatility for duck products. The demand for duck products will be relatively high during festive occasions such as Christmas and Easter. These farmers are able to adjust their sales strategies to gain financial benefits of increased demand and relatively higher prices during peak periods. However, 78% of respondents reported that they did not experience seasonal variations in demand. The data observed from the study area reveal that most farmers are unable to effectively access or benefit from seasonal market opportunities. The seasonal demand is a market risk which reduces income opportunities of farmers.

Challenges Arising from Market Dependence and Seasonal Demand Fluctuations

Based on the analysis of marketing patterns, the study identifies many challenges that limit the sustainability of duck farming in the study area. The main challenges faced by duck farmers are the following:

1. Most of the duck farmers depend on middlemen for market access. This reduces their bargaining power and limits their ability to influence prices.
2. Inadequate linkages with consumers, retailers, and institutional buyers restrict farmers' market reach and income potential.
3. Demand for duck products is concentrated around specific festive periods. This leads to uneven income distribution and off-season instability.
4. Duck farmers lack the planning capacity, storage facilities, and market information required to benefit from seasonal demand ups and downs.
5. Duck products are sold in minimally processed form. This limits higher price opportunities and exposes farmers to market price fluctuations.

6. Limited functional effectiveness of cooperatives reduces opportunities for collective bargaining and risk sharing.
7. Inadequate access to digital platforms and marketing tools restricts farmers' ability to diversify sales channels and reach wider markets.
8. Absence of reliable market intelligence systems prevents farmers from predicting demand trends and making informed marketing decisions.

Policy Interventions to Strengthen Duck Farming Sector

The findings of the study recommend some targeted policy interventions to enhance the economic sustainability of duck farmers. They are the following:

- The government should take steps to improve functional efficiency of cooperatives through collective selling, price negotiation, and institutional market linkages.
- Establish farmer markets, local marketing hubs, and partnerships with retailers and restaurants. This will reduce farmers' dependence on middlemen.
- The government should provide advanced market information and sales planning support to help farmers benefit from festive demand periods.
- Introduce training, subsidies, and facilities for processing, packaging, and branding of duck products.
- Provide digital literacy training and infrastructure support to farmers and encourage them to use online platforms.
- Establish market advisory services to provide price trends, demand forecasts, and simple cost-based pricing guidance.
- Introduce financial support measures such as minimum support price during demand falls.

CONCLUSION

Duck farming continues to play an important role in supporting rural livelihoods in Kerala. But duck farmers are highly vulnerable to market-related risks. Dependence on intermediaries, limited access to direct markets, and seasonal demand fluctuations limits income stability and weaken farmers' economic resilience. Addressing these challenges through supportive policy interventions is essential to reduce vulnerability and strengthen the long-term sustainability of duck farming livelihoods.

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