A Study on Value Chain Efficiency of the Agricultural Products in Bangladesh

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Contents

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Abstract

Analyzing the value addition and price-setting mechanisms for selected agricultural products across every possible value chain, from production to retail, as well as identifying key actors and their roles in determining prices at various stages, are the two key objectives of this survey-based study. A Bangladesh Bank team surveyed 14 districts on five essential agricultural products: rice, potato, onion, egg, and broiler chicken. Overall, the study concludes that shortfalls in supply were the primary cause of price increases for all selected agricultural products. The study findings indicate that farmers or producers are the main risk takers, as they might earn a reasonable profit or face losses depending on supply, demand, competition, and production costs. Other players in the intermediaries typically add cost and profit margin before selling the products to the next actor. A critical insight of this report is that imports can help stabilise the prices of the selected agricultural products during the months of off-peak production when the supply is naturally low. Hence, to ensure price stability without hurting local producers, the government can lower or eliminate the import duties before certain months when there are shortages in the supply of respective commodities. However, the study finds that there are scopes to improve efficiency in the supply chain; hence, this report offers some recommendations.

Key words: agriculture in Bangladesh, value chain, supply shortage, price stability

JEL Classification: E00, E20, E23, Q10, Q11, Q14

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1. Introduction

Bangladesh has long been recognized as an agriculture-based country, contributing significantly to its economy since its independence. As of the end of FY24, agriculture accounted for approximately 11.55 percent of the country's total nominal GDP (BBS, 2025). The agricultural economy of Bangladesh primarily focuses on crop production, supported by the country's sub-tropical monsoon climate, which is ideal for growing various tropical crops such as rice, wheat, potatoes, onion, jute, pulses, oilseeds, and sugarcane. Despite challenges like land degradation, land use changes, and climate change, Bangladesh has gradually achieved food self-sufficiency over the last few decades.

However, the economy frequently faces natural disruptions such as heavy rainfall, floods, droughts, or external factors such as global commodity price hikes. Last year (2024), floods occurred from August to October, leading to crop shortages. Shortages of the seasonal crops impacted prices, resulting in higher inflation. Besides, in recent periods, the country experienced depreciating pressure in its domestic currency, which heightened the import costs of food items. Moreover, in case of supply shortages, there is a concern that business people in the supply chains manipulate prices to gain extra profit. In this context, it is vital to look into several factors relating to domestic crop production, including cost, selling price, profit, and production capacity to meet consumer demand. Moreover, it is crucial to determine how the products transfer through different supply channels before being delivered to customers. For convenience, a Bangladesh Bank study team attempts to investigate five key crops, such as rice, potato, onion, broiler chicken, and egg, which are treated as essential food items for all levels of people in the country. Understanding the importance and capacity of the selected agricultural products against the country's needs, while discussing past studies, is crucial before finalizing the items for the survey.

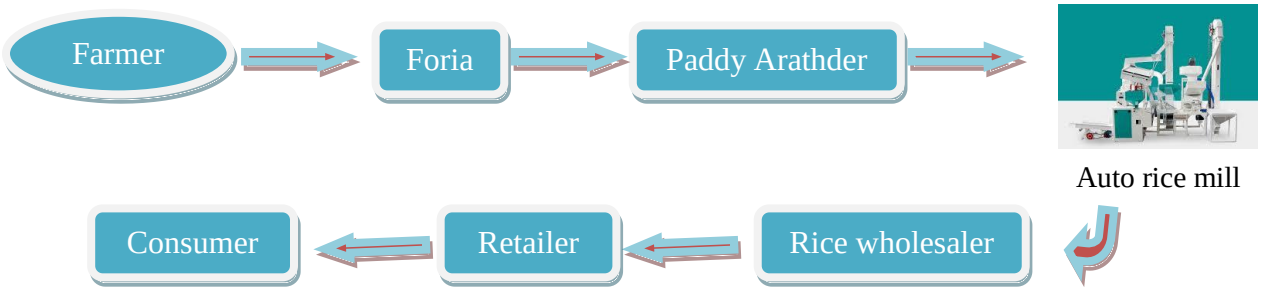
1.1 Paddy/Rice

Paddy cultivation plays a crucial role in the agricultural economy of Bangladesh, contributing significantly to food security, rural livelihoods, and economic growth. Rice accounts for 10.84 percent of the total consumption expenditure in the country's CPI basket (24.55 percent of total food expenditure)[2]. As one of the world's leading rice-producing countries, Bangladesh relies heavily on its paddy supply chain to meet the demands of its growing population. However, challenges such as climate change, inefficient supply chain management, price volatility, and post-harvest losses continue to hinder the sector's full potential.

[2] Source: Bangladesh Bureau of Statistics

The paddy/rice supply chain in Bangladesh (Diagram 1) involves multiple stakeholders, including farmers, forias/intermediaries, rice millers, wholesalers, retailers, and consumers (Hossain & Jahan, 2018). The process begins with farmers who cultivate and harvest paddy. Farmers sell their products to Foria/local traders or directly to auto rice mills. Forias act as intermediaries between farmers and larger traders (Arathders). They purchase paddy from farmers at farmhouses or local markets and sell it to Arathders at a markup. Paddy Arathders handle bulk trading of paddy, supplying rice mills with raw paddy and ensuring efficient distribution from smaller traders to larger processing units.

Diagram 1: A general flow of paddy/Rice in the supply chain



Some studies highlight inefficiencies due to the high involvement of middlemen, which affects price stability and farmer profitability. Rice mills (Auto/conventional) are responsible for processing raw paddy into consumable rice. They are the key actors of supply chains leading to wholesalers and retailers. Rice millers are the main market catalysts in the paddy value chain in Bangladesh (Ahmed, et al., 2021 and BIDS report). Rice wholesalers procure rice from mills and distribute it to retailers, ensuring a fixed margin and adequate market supply. However, they are often accused of manipulating the rice market (Ahmed, et al., 2021). Retailers purchase rice from wholesalers and sell it to end consumers.

Some studies suggest that market pricing is controlled by specific stakeholders rather than being determined by supply and demand dynamics. Midstream players, particularly millers, Arathdars, and wholesalers, have been found to generate supernormal profits according to price spread analyses (Alam et al., 2020). Millers provide cash in advance to Arathdars with instructions regarding paddy quality, quantity, and price range. The Arathdars then purchase paddy following these guidelines and deliver it to millers (Ahmed, et al., 2021).

Another study finds that while millers claim to be losing money in the rice processing industry, they often fail to account for the value of by-products. Alam et al., 2020 show in their analysis that millers typically made a profit ranging from Tk. 4.6 per Kg in 2019 to Tk. 9.5 per Kg in 2017 for Transplant Aman (T. Aman paddy), while during the Boro season, they earned from Tk. 4.7 per Kg in 2020 to Tk. 8.2 per Kg in 2018 when by-products were included.

The price of paddy and rice in the market is influenced by production conditions, import decisions, and domestic procurement. Value chain actors (millers and traders) often engage in speculative activities to control prices. Most farmers sell the majority of their marketable surplus within the first month of harvesting. However, in 2020, in the Boro season, farmers delayed releasing their paddy stock. Traders and millers also anticipated food shortages during the pandemic and retained a part of their stockpiles of rice. Moreover, the government missed the procurement target and delayed the rice import. Those factors combined led to rice price hikes (Alam et al., 2020).

Paddy procurement methods, their effectiveness, and the function of middlemen in these systems are all subjects of constant review. The government procures only a small fraction of the total paddy produced, leaving most farmers to rely on the open market, where prices are often lower than government procurement rates. Historically, wholesale price trends are aligned with milled rice procurement prices. Survey results indicate that approximately 69.10 percent of respondents acknowledge the presence of middlemen in the current paddy procurement system, while 94.30 percent believe the system needs improvement, and 99.0 percent suggest introducing a new procurement mechanism (Ahmed et al., 2021). These results show that in order to improve sustainability and transparency, paddy procurement systems urgently need to be reformed.

Existing literature on the paddy/rice supply chains in Bangladesh underscores the necessity of improved efficiency through better infrastructure, technological interventions, policy reforms, and sustainable practices. While several studies have examined specific aspects of the supply chain, there is still a gap in holistic research that integrates production, distribution, market dynamics, and policy effectiveness. This study aims to understand the gap by providing a comprehensive analysis of supply chain of rice and then attempts to bridge the gap with a set of recommendations for a sustainable improvement in the supply chains. Moreover, identifying the reason behind the instability of rice price, which has exacerbated inflationary pressure, is crucial to examine for the purpose of value chain efficiency of rice at different stakeholder levels.

1.2 Potatoes

Among the crops, rice remains the staple food of Bangladesh, earning the country recognition as a "rice-eating nation." However, potatoes have also gained significant popularity over time. Potatoes serve as both a food crop and a vegetable, consumed by people across all economic strata (MM Hossain and F Abdulla, 2016). Consequently, the cultivation area for potatoes in the country has expanded significantly, covering approximately 4.5 lakh hectares (DAE, 2025). Potatoes are widely cultivated across the country, with the highest concentration in the northwestern region, particularly in Rangpur and Bogura districts, as well as Munshiganj district, another major production hub (BBS, 2023).

In FY24, Bangladesh produced approximately 10.6 million metric tons of potatoes, representing a significant portion of the country's agricultural output. This accounted for nearly half of the total vegetable production (excluding potatoes), which stood at 24.1 million metric tons during the same period (DAE, 2025). Globally, Bangladesh ranks seventh among the largest potato-producing countries (FAO, 2023).

The primary potato varieties grown in Bangladesh include Diamant, Cardinal, Granula, Asterix, Binella, Multa, Patrones, Arinda, and Lady Rosetta (Hossain & Abdulla, 2016). Potato cultivation in the country is divided into two main seasons: November-December and December-February. Notably, Diamant and Asterix are the most widely cultivated varieties during the December-February period, with harvesting from mid-February to March. These two varieties dominate the market and are available from March to December, forming the basis of potato trade during this time frame.

Existing research indicates that most studies collect primary data during the early harvesting period, from February to May (Akter et al., 2016; Shahriar et al., 2013; Mannan, 2020; Hossain and Abdulla, 2016). However, this limited data collection window may not capture the entire potato production, harvesting, and consumption lifecycle. This study collected data in January to address this gap, covering the previous year's potato production and trading activities. This comprehensive approach provides a more complete picture of potato production and value chain dynamics throughout the year.

Moreover, most previous studies have focused on one or two districts, limiting regional comparative analyses (Akter et al., 2016; Hossain & Abdulla, 2016; Shahriar et al., 2013). This study addresses gaps—potato variety, survey window, and regional production concentration—in existing research and provides a detailed understanding of the regional value chain dynamics. It will enable policymakers and stakeholders to enhance the efficiency and equity of potato production and marketing in Bangladesh. A significant portion of the Bangladeshi population is directly or indirectly dependent on potato production and marketing. The potato value chain involves a series of value-generating activities from the farm level to the ultimate consumer. In Bangladesh, the potato value chain typically starts with producers and includes several intermediaries, such as Forias, Beparis, wholesalers, and retailers (Akter et al., 2016). This study confirms the presence of a similar value chain structure, highlighting the roles of these intermediaries in shaping the marketing and distribution of potatoes.

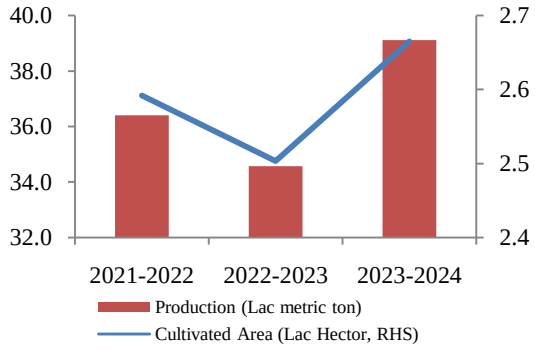
1.3 Onions

Onions are among the most widely used ingredients in Bangladeshi cuisine, serving primarily as a key spice that enhances the aroma, taste, and flavor of food. In terms of production, Bangladesh is currently

the fifth-largest onion producer globally (FAO, 2024), having produced 3.91 million metric tons in FY24 (Chart 1). Despite their cultural significance and substantial domestic production, Bangladesh continues to face a persistent supply-demand gap in onion availability (FAO, 2024). This shortage often leads to sharp price hikes, prompting the country to rely on onion imports as the primary means of stabilizing prices (Akter et al., 2023).

Several factors hamper onion production, with environmental conditions playing a major role. For instance, heavy rainfall and flooding can severely disrupt harvests, leading to sudden supply shocks. Additionally, as a semi-perishable commodity, onions are highly susceptible to post-harvest losses, further exacerbating supply shortages. Beyond environmental challenges and inadequate infrastructure, some analysts argue that market manipulation by an intermediary who exploits the supply chain for abnormal profits also contributes significantly to price volatility (DCCI, 2024).

Chart 1: Onion cultivation and production



Source: Annual Report 2024, Department of Agricultural Extension

In the last couple of years, onion prices experienced abnormal hikes. For instance, in December 2023, the price of onions soared as high as Taka 250 per Kg (Akter et al., 2023). Even in the last quarter of 2024, onion prices exceeded Taka 150 per Kg (Financial Express, 2024). To stabilize the market and meet domestic demand, the government initiated the import of onions, which led to a swift decline in prices within a short period. Despite being a relatively small component of the Consumer Price Index (CPI) basket, fluctuations in onion prices disproportionately impact public perception and consumer sentiment due to their widespread daily use.

In this context, the present study aims to analyze the value addition and price-setting mechanisms of onions across the entire value chain, from production to retail. It seeks to identify the key actors involved at each stage, examine their roles in determining prices, and evaluate how their actions contribute to overall price formation.

1.4 Eggs

Eggs constitute an essential part of diets globally, providing millions of people with affordable protein and nutrients. Demand for eggs is increasing in developing nations due to their affordability and

nutritional value. Gerber et al. (2013) claim that urbanization, population increase, and rising affluence are the causes of this trend in egg demand.

There has been a notable increase in egg prices in the country in recent years, which has alarmed industry stakeholders and consumers. Egg prices are directly impacted by changes in the pricing of maize and soybeans, which might be caused by trade regulations, weather, or worldwide market patterns (FAO, 2020). Ravindran (2013) argues that the largest cost component of egg production is feed, especially maize and soybeans. Besides, price volatility might result from production and distribution disruptions caused by geopolitical catastrophes like pandemics or hostilities (FAO, 2020). Moreover, other factors that affect egg value chains and lead to price hike are seasonal demand spikes (FAO, 2020), trade restrictions, tariffs, or export bans (Reardon et al., 2019), dominating large producers (Reardon et al., 2019), labor shortages or wage increases (Ravindran, 2013), rise in transportation, lighting, and heating expenses in tandem with energy prices (Reardon et al., 2019), and disease outbreaks (Alders et al., 2018 & FAO, 2020). Due to the regional variations in production systems, market dynamics, and policy contexts, the impact of these factors has different effects. For instance, small-scaled farmers in developing nations are particularly susceptible to changes in input prices and disease outbreaks (Alders et al., 2018). On the other hand, developed nations use modern technology in production systems but have to deal with issues like energy prices and legal compliance (Windhorst, 2006).

There is a noticeable lack of research that thoroughly examines the whole value chain to pinpoint the most significant phases in Bangladesh, even if previous studies offer overall insightful information on the variables influencing the inflation of egg prices. This study aims to identify manufacturing or distribution channels of broiler production as well as the price-setting mechanism from producers to retailers. Moreover, developing successful interventions to stabilize prices and guarantee food security requires understanding the underlying reasons for inflation in egg prices and its impacts on each stage in the egg value chain.

1.5 Broiler Chicken

Poultry is a part of agricultural farming system in Bangladesh and broiler is one of the main products of poultry farming. In addition, broiler is an excellent source of protein and nutrients which are essential for health and growth of the human body. The contribution of the broiler industry is vital to the national economy, generating employment opportunities, additional income for households and improving the

nutritional level of the people. About 16.5 percent of the agricultural GDP came from livestock during FY23.

The poultry sector has emerged as a flourishing and promising commercial sector in Bangladesh in recent years. Since the climate of Bangladesh is suitable for broiler farming, the broiler birds can be raised easily to fulfill the daily requirements of nutrient value. Broiler has a shorter life cycle, and their production requires less capital compared to other meat-producing animals. The per capita intake of poultry meat in Bangladesh is only 11.2 grams per day (HIES, 2011) compared to a standard requirement of 36 grams per day (Ahmed & Islam, 1985).

Some socioeconomic studies have so far been conducted on broiler farming in different areas of Bangladesh. Previously, some studies have been conducted, among others, by Ahmed (2001); Tohura (2004); Akram (2006); Rahman (2007); Akhter (2008); Sultana (2009) and Piasa (2011) on cost, return and profitability of boiler farming in selected areas of Tangail, Rangpur, Kishoreganj, Gazipur, and Mymensingh districts. All of the studies find that broiler production is profitable, although the level of profit varies among the studies. However, those studies do not focus on the extent of profitability at different stages of supply chains from producers to retailers. This study aims to identify the price determination factors in broiler production and understand the value chain efficiency of broiler production from producer to consumer.

2. Organization of the Study Report

The remaining sections of the study report are arranged as follows. The study's objectives are outlined in Section 3. The survey's methodology and strategy, as well as its scope and limits, are explained in Sections 4 and 5, respectively. The survey findings on paddy/rice, potatoes, onions, eggs, and broiler chicken are detailed in Sections 6, 7, 8, 9, and 10, respectively. These sections primarily highlight their discussion from various descriptive and analytical angles, such as the sample size and coverage of the data collection area, the identification of supply and value chain actors, the supply chain's cost and price dynamics, the segregation of cost factors, and the causes of selected commodities' price increases. Specific recommendations for the respective agricultural products are also included in these sections. Section 9 includes a case study on a medium-sized poultry farm. A few corporate feed companies' feed cost experiences are shared in Section 11. Section 12 provides concluding remarks and recommendations.

3. Objectives of the Study

The following specific objectives will be central to this study:

I. Analyze the value addition and price-setting mechanisms for selected agricultural products across every possible value chain, from production to retail; and

II. Identify key actors and their roles in determining prices at various stages, and assess the influence of these mechanisms on price volatility and inflation.

4. Scope and Limitations of the Study

The study is considered a pilot project because understanding the behavior of every stage of the supply chain is crucial before conducting a large-scale survey to represent the national picture. Therefore, this study primarily limits its focus to specific food categories and regions. The food categories include commodities that form a significant portion of household diets, have substantial weight in the food component of CPI, and experience low to moderate price fluctuations. On the other hand, the team for this study reviews the production volume and/or cultivation area of the selected food items by district based on available information from the Bangladesh Bureau of Statistics and some other studies. Accordingly, the team selects the following districts, such as Naogaon, Bogura, Rangpur, Dinajpur, Faridpur, Rajbari, Magura, Munshigonj, Jamalpur, Dhaka, Gazipur, and Mymensingh for the pilot survey. The survey was conducted over a twelve-day period from January 5 to January 16, 2025. However, some focus group discussions with importers and feed producers were also conducted in the following months until April 2025. The study has covered only 195 respondents from 14 districts, representing a small portion of the country's agricultural value chain and not constituting a representative sample.

The study employs both qualitative and quantitative techniques, including a desk review, field survey, focus group discussions, and data analysis. The desk review analyzes existing literature, reports, and data on price-setting and inflation in agricultural value chains and consults known stakeholders to develop a structured questionnaire. The pilot survey, comprising structured interviews and surveys with key stakeholders, serves as the core of the study. The study team administered the survey, including data collection.

5. Survey Design and Strategy

The pilot survey identifies key stakeholders as survey participants and users. The survey participants include producers, such as farmers and cooperatives; intermediaries, such as wholesalers and distributors; and retailers, including supermarkets, small grocery stores, and market vendors. The survey also attempts

to identify any other middlemen in between the formal supply chains, which help to understand their behavior towards price setting.

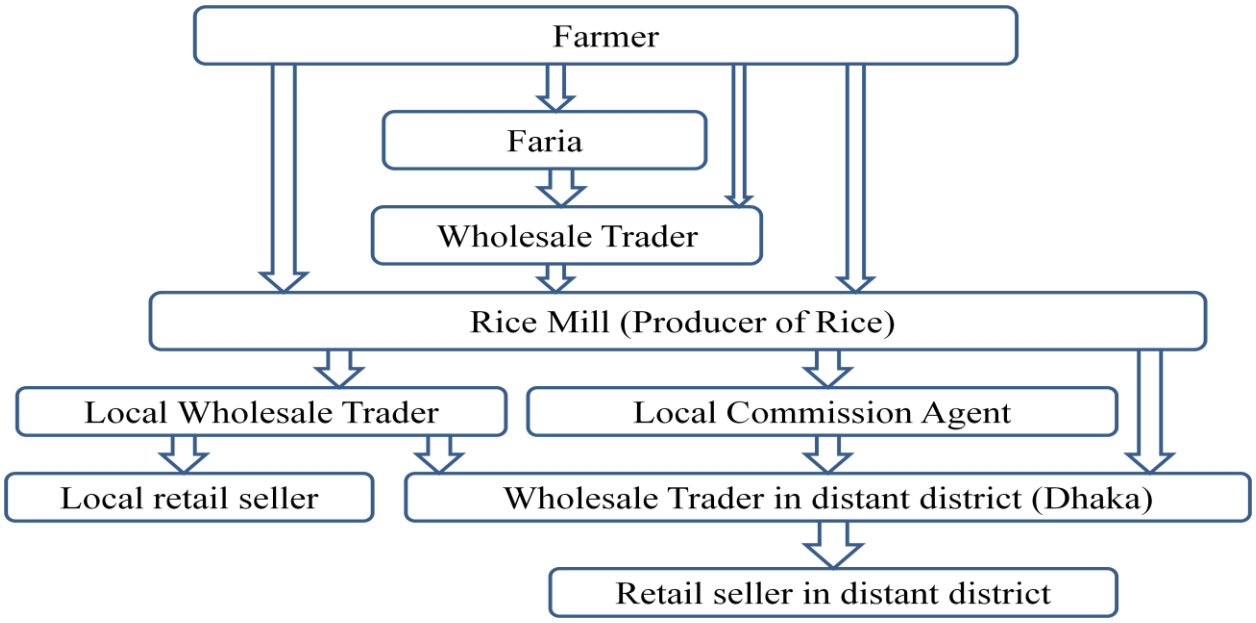
The survey operates on several key themes: cost dynamics, price variability, and supply chain challenges. The cost dynamics survey at the producer level reveals production costs, selling prices, and market access. The same at the intermediary level gleans information about the costs associated with transportation, storage, and distribution. Retailers face cost dynamics distinct from the earlier two: procurement costs, pricing strategies, and profit margins. The price variability reflects seasonal changes in prices and geographical variations in pricing. Finally, the supply chain challenges reveal the impact of fuel prices, labor shortages, and infrastructure issues. The structured interviews follow a set of questionnaires that include some general questions and some questions specific to the nature of the respondents – producers, intermediaries, and retailers.

6. Survey Results and Discussions on Paddy/Rice

The survey was conducted in the top three rice-producing districts, Mymensingh, Naogaon, and Dinajpur, based on the data for FY23[3]. The survey data was collected through in-person interviews and field visits to gather qualitative and quantitative insights on rice production, distribution, and market dynamics. A total of 83 respondents participated, including 23 farmers, 15 Foria (intermediary traders), 9 Paddy wholesalers (Arathdars), 11 rice mill owners, 13 Rice wholesalers, and 12 retailers. The data was systematically analyzed using statistical tools for quantitative insights and thematic categorization for qualitative findings to provide a comprehensive understanding of market dynamics.

[3] 2024-08-25-06-16-7db0c4bbf27a35192874a9a0b28ae0f8.pdf

Diagram 2: Actors in paddy/rice supply chain found by the study



6.1 Costing and profit margins for coarse paddy/ rice

Table 1 presents a detailed breakdown of the costing and profit margins associated with each Kg of coarse paddy and rice across different stages of the supply chain. It begins at the producer (farmer) level and moves through intermediaries such as paddy Foria and paddy Arathdar, followed by the rice miller, wholesalers, and finally, retailers. The production cost at the farmer level is Tk. 19.6 per Kg, covering all production expenses except land lease, and the selling price is Tk. 33.9 per Kg, yielding a significant profit margin of 73 percent (Tk. 14.3 per Kg). As the paddy moves through intermediaries, the purchasing cost increases, but profit margins for middlemen remain relatively low. Paddy Foria purchases at Tk. 33.9 per Kg and sells at Tk. 35.7 per Kg, earning only a 2.9 percent (Tk. 1.0 Tk per Kg) profit, while paddy Arathdar earns the lowest margin of 0.8% (Tk. 0.3 per Kg), selling paddy at Tk. 36.0 per Kg.

At the rice milling stage, paddy is converted into rice, with a conversion factor of 1 Kg of paddy yielding 0.685 Kg of rice. The rice mill purchases paddy at Tk. 36.0 per Kg and sells the processed rice at Tk. 40.9 per Kg – an equivalent rate of rice from 1 Kg paddy, which corresponds to Tk. 55.4 per Kg in terms of rice. Additionally, the mill generates extra income of Tk. 2.95 per Kg paddy from by-products. This results in a profit margin of 4.3 percent (Tk. 1.7 per Kg). The rice then moves to wholesalers, who purchase it at Tk. 55.4 per Kg and sell it at Tk. 57.4 per Kg, earning a slim profit margin of 1.5 percent (Tk. 0.85 per Kg). Retailers, who sell directly to consumers, purchase at Tk. 57.4 per Kg and sell at Tk. 62.6 per Kg, yielding a 3.8 percent (Tk. 2.3 per Kg) profit.

Table 1: Costing and profit margin of coarse paddy/ rice at different steps of supply chain (Tk./Kg)

Variables	Paddy			Rice		
	Producer/ Farmer*	Paddy Foria	Paddy Arathdar	Rice Mill** (paddy to rice)	Rice wholesaler	Retailer
Purchasing cost	19.6	33.9	35.1	36.0	55.4	57.4
Other cost	-	0.8	0.61	3.2	1.15	2.9
Selling price	33.9	35.7	36.0	40.9# (55.4 tk Kg)	57.4	62.6
Profit in amount (in percent)	14.3 (73%)	1.0 (2.9%)	0.3 (0.8%)	1.7 (4.3%)	0.85 (1.5%)	2.3 (3.8%)

Note: 1 Kg paddy = 0.685 Kg rice.
*Purchasing cost at the farmer level stands for all types of expenses without land lease cost to produce each Kg paddy.
**Selling price at rice mill calculated for the rice price from 1 Kg paddy and other income from that amount of paddy.
Other income from 1 Kg paddy is Tk. 2.95.

Overall, Table 1 highlights that the significant profit is earned at the farmer level and the relatively small margins remain for intermediaries and wholesalers. The rice miller benefits from additional income streams, while the retailers have a better margin compared to the wholesalers, likely due to their direct sales to consumers.

6.2 Costing and profit margins for fine paddy/ rice

The analyses on fine paddy/rice depicted in Table 2 provide a detailed description of the costing and profit margins associated with each kilogram of fine paddy/rice across different stages of the supply chain. Like coarse paddy/rice, the process begins with the producer (farmer), followed by intermediaries such as paddy Foria and paddy Arathdar, before reaching the rice miller, and moves through wholesalers and retailers. At the producer level, the production cost is Tk. 20.0 per Kg, which includes all production expenses except land lease, and the selling price is Tk. 37.0 per Kg. This results in an 85 percent profit margin (Tk. 17 per Kg), making the farmer the most profitable entity in the supply chain. As the paddy moves through intermediaries, profit margins become significantly smaller. Paddy Foria purchases fine paddy at Tk. 37.0 per Kg and sells at Tk. 39.5 per Kg, earning a 4.5 percent (Tk. 1.7 per Kg) profit, while Paddy Arathdar has a slightly higher margin of 6.4 percent (Tk. 2.6 per Kg) by selling at Tk. 42.7 per Kg.

At the rice milling stage, fine paddy is converted into fine rice with a yield of 0.617 Kg of rice per 1 Kg of paddy. The rice mill purchases fine paddy at Tk. 42.7 per Kg and sells the processed rice at an adjusted price of Tk. 50.0 per Kg including extra income, equivalent to Tk. 74.5 per Kg in terms of rice weight. Additionally, the mill benefits from Tk. 4.0 per Kg of extra income from by-products, leading to an 8.9 percent (Tk. 4.1 per Kg) profit margin, the highest among intermediaries. The fine rice is then distributed

to wholesalers, who purchase it at Tk. 74.5 per Kg and sell it at Tk. 76.4 per Kg, resulting in the lowest profit margin of the entire supply chain at 0.6 percent (Tk. 0.42 per Kg). Finally, retailers, who sell rice directly to consumers, purchase it at Tk. 76.4 per Kg and sell at Tk. 81.0 per Kg, achieving a 2.1 percent (Tk. 1.7 per Kg) profit margin.

Table 2: Costing and profit margin of fine paddy/ rice at different steps of supply chain (Tk./Kg)

Variables	Paddy			Rice		
	Producer/ Farmer*	Paddy Foria	Paddy Arathdar	Rice Mill** (paddy to rice)	Rice wholesaler	Retailer
Purchasing cost	20.0	37.0	39.5	42.7	74.5	76.4
Other cost	-	0.8	0.61	3.2	1.48	2.9
Selling price	37.0	39.5	42.7	50.0# (74.5 tk Kg)	76.4	81.0
Profit in amount (in percent)	17 (85%)	1.7 (4.5%)	2.6 (6.4%)	4.1 (8.9%)	0.42(0.6%)	1.7 (2.1%)

Note: 1 Kg paddy = 0.617 Kg rice.
*Purchasing cost at the farmer levels stands for all types of expenses without land lease cost to produce each Kg paddy.
**Selling price at rice mill calculated for the rice price from 1 Kg paddy and other income from that amount of paddy.
Other income from 1 Kg paddy is Tk. 4.0.

Overall, the survey findings indicate that farmers gain the highest percentage profit in case of fine paddy, while intermediaries such as Foria and paddy Arathdar earn relatively small margins. The rice mill benefits from both rice sales and by-product income, making it a crucial profit-generating stage in the supply chain. Meanwhile, wholesalers have the lowest profit margins, likely due to high operational costs and competitive pricing, whereas retailers see slightly higher margins due to direct consumer sales.

6.3 Segregation of cost components for paddy and rice production

The analysis in Chart 2 describes the average cost per kilogram paddy for various agricultural inputs. This cost breakdown highlights labor and fertilizers and pesticides as the primary drivers of overall paddy production. Among them, Labor is the most expensive, costing Tk. 7.56 per Kg paddy, followed by fertilizer and pesticides at Tk. 5.29 per Kg, indicating their high value addition in paddy production. Transport is relatively inexpensive at Tk. 1.59 for yielding 1 Kg paddy, while irrigation costs Tk 1.08 per Kg. Seeds incur the lowest cost at just Tk. 0.35 per Kg. Other costs amount to 3.73 Tk. for each Kg paddy, including expenses for ploughing.

Chart 2: Average cost of farmers for 1 kg paddy except leasing

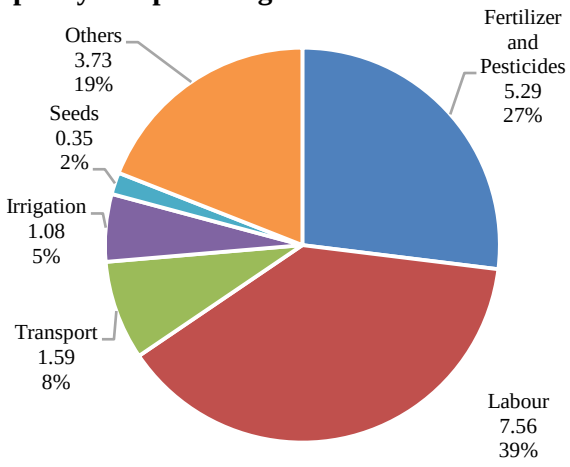


Chart 3: Average cost of rice miller for 1 kg paddy other than buying price

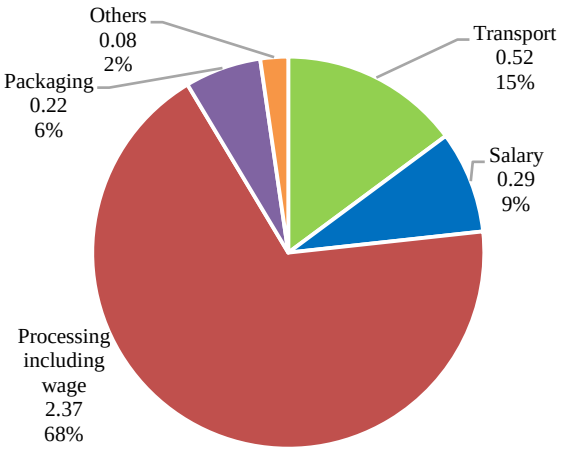


Chart 3 illustrates the cost breakdown of other expenditures except the paddy buying price at the rice mill stage to convert 1 kilogram of paddy into rice, including crushing/processing, transportation, packaging, salary and wages. Processing cost, including wages, is the highest at Tk. 2.37 (68 percent of other costs) for crashing 1 Kg of paddy, reflecting expenses tied to transforming raw materials or handling the product, which includes wages for labor involved in various stages of the process. Transport costs amount to Tk. 0.52, indicating the expenses related to moving the paddy. Salary for employees at different steps contributes to Tk. 0.29 of the total cost. Packaging costs are relatively lower at Tk. 0.22 for 1 Kg paddy, covering the materials and labor required to package the product. Lastly, other costs contained miscellaneous expenses, including bank interest and insignificant expenses, which add up to Tk.0.08 in the process.

6.4 Comparison of price of paddy between 2023 and 2024

Chart 4: Price of coarse paddy/ rice (per mound)

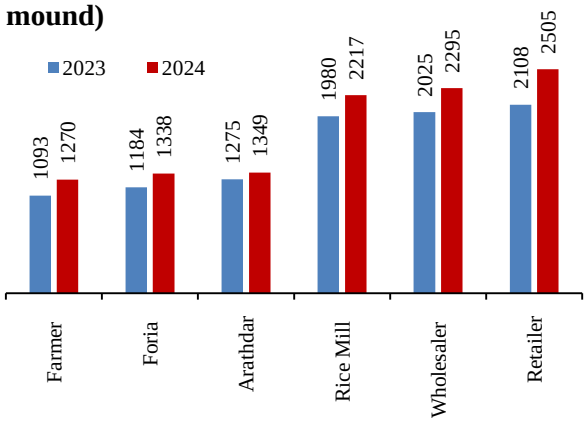
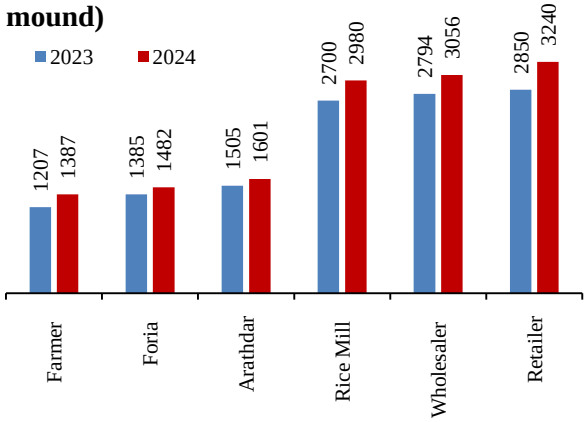


Chart 5: Price of fine paddy/ rice (per mound)



Charts 4 and 5 provide a comparative price (per mound) at various stakeholders in the paddy/ rice supply chain for both coarse and fine paddy/ rice, respectively, over two years, 2023 and 2024. The charts indicate the percentage change in the selling price of each mound paddy/ rice in the current year compared to the price in the previous year. For coarse rice, the price at the farmers' level increased by 16.2 percent from Tk. 1093 per mound in 2023 to Tk. 1270 in 2024, while for fine rice, farmers saw a 14.9% increase, from Tk. 1207 per mound in 2023 to Tk. 1387 in 2024. Other stakeholders also experienced price increase growth: Foria's price rose by 13.0 percent for coarse rice and 7.0 percent for fine rice; Arathdar's price grew by 5.8 percent for coarse rice and 6.4 percent for fine rice. Rice mills saw a 12.0 percent increase for coarse rice and a 10.4 percent increase for fine rice. At the wholesaler stage, the price rose 13.3 percent for coarse rice and 9.4 percent for fine rice. Retailers mentioned the highest increase, with 18.8 percent for coarse rice and 13.7 percent for fine rice, reflecting a significant rise. Overall, a general upward trend in price across all stakeholders is observed from 2023 to 2024, with the highest increases seen in retail prices for both rice types.

6.5 Reasons behind the high price of rice

Farmers respond that production of Aman rice was hampered due to floods and excessive attack of pest. Farmers' in Naogaon also reduced the area of land use for paddy cultivation which was substituted by mango and potato cultivation. Sometimes, irrigation is being hindered by the rising theft of electrical transformers which discourage farmers to cultivate paddy. Respondent farmers also mention that higher prices of fertilizer and pesticides contribute to higher production costs.

Respondent millers are struggling with increased interest rate of bank loan in addition to higher cost of electricity and wage of labor. Government requirement of using jute bag also has a share in rising price of rice. At retail stage, increased transportation and labor costs lead to increase of rice price. Consumers' tendency to overstock during periods of supply shortage also contribute to rise in price.

6.6 Roles of actors in price determination

Rice mills are playing key role in setting prices based on milling costs and market demand and supply condition of paddy and rice. Forias and wholesale traders play a role in adding their margin as paddy moves through the supply chain. Commission agents facilitate transactions but do not directly influence pricing, though they may add costs. Wholesalers and retailers in both local and urban markets, including Dhaka, set the final price based on supply, demand, and competition.

6.7 Recommendations

The government withdrew the duty on rice import in October 2024 due to insufficient production in the recent Aman season. Rice import helps to stabilize the price of rice because rice imports have created

competition for local millers. However, although importers are importing rice, they are not be able to import the required quantity of rice due to a lack of sufficient foreign exchange. Therefore, importing during the period of supply shortage is crucial to keep the market price of rice stable. However, the government should manage rice imports carefully to avoid excessive imports during the harvest season.

Banks and financial institutions should strengthen their efforts towards improving farmers' access to affordable credit and financial services to invest in better equipment, seeds, and fertilizers. Farmers should be able to get a minimum amount of loan against keeping paddy in any warehouse in their locality so that they can sustain a temporary price fall during harvesting time. Price stability for rice can be ensured by implementing a reliable and transparent price range. Government rice procurement should be accountable and price-competitive. Encouraging direct linkages between farmers and large wholesale traders or rice millers and ensuring secure transactions between parties, like LC, are imperative to enhance efficiency in the value chain of rice. Finally, the government should support research and adoption of high-yielding, drought and flood-resistant and pest-resistant rice varieties for long-term sustainability paddy production and rice prices.

7. Survey Results and Discussions on Potatoes

This study examines the value chain dynamics across three key potato-producing regions: Rangpur, Bogura, and Munshiganj, which collectively account for 32.80 percent of the aggregate production. The study analyzes actor-specific margins, seasonal price mechanisms, and policy interventions by integrating primary data from growers, traders, and cold storage operators. The findings propose targeted strategies for enhancing equity and efficiency in Bangladesh's potato value chain.

The potato supply chain consists of various key actors whose roles collectively form the foundation of the market system. The presence or absence of these actors significantly impacts the growth and marketing of the crop. A supply chain represents the series of transactions between producers and consumers, playing a crucial role in achieving the marketing objectives of the product. This study analyzes the potato supply chain, revealing the movement of potatoes from producers to consumers through a network of actors, including farmers/growers, Forias, Aratdars, wholesalers, retailers, and consumers, forming an interconnected chain.

Diagram 3: Potato value chain network

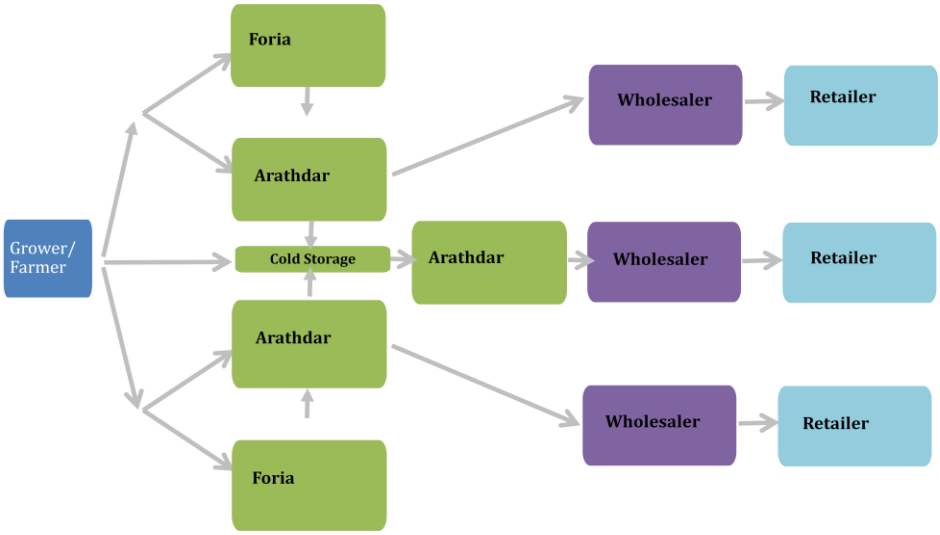


Diagram 3 shows that at the core of the potato supply chain are the farmers or growers, who play a pivotal role in the process. They distribute potatoes to various marketing actors in different proportions, supplying them directly to Forias and Arathdars from their land, homes, or cold storage facilities. Forias, as non-licensed middlemen, handle a significant share of the total potato production. They collect potatoes from farmers' land and homes and sell them to Arathdars.

Arathdars, also functioning as middlemen, purchase potatoes from both farmers and Forias. They also source potatoes from cold storage and sell their stock to wholesalers. Wholesalers, being major players in the supply chain, acquire large quantities of potatoes from Arathdars and then supply them to retailers. Retailers, positioned closer to the consumers, purchase potatoes from wholesalers and sell them directly to end consumers. Consumers represent the final link in the potato supply chain, buying the produce from retailers for consumption. Each actor in the chain plays an essential role in ensuring the efficient movement of potatoes from producers to consumers.

7.1 Cost and price dynamics in the supply chain of potatoes

The survey team collects disaggregated data from producers to retailers on several dimensions of the potato value chain through structured questionnaires from all actors in the chain. The dimensions include cost and price dynamics, price stabilization factors, and relevant structural issues.

Table 3: Cost and price movements across actors in the value chain (Tk./Kg)

Value Chain Actors	Land Potatoes	House Potatoes	Cold Storage Potatoes
Grower			
• Production costs	• 17	• 17	
• Selling Price	• 18-35	• 23-50	
• Profit Margin (%)[4]	• 6-51	• 26-66	
Foria			
• Purchase price	• 21-32	• 32-44	
• Other costs	• 2.5	• 2.5	
• Selling price	• 24-35	• 35-47	
• Profit margin (%)	• 1.4-2.1	• 1.1-1.4	
Arathdar			
• Purchase price	• 18-35	• 23-50	• 33-70
• Other costs	• 6	• 6	• 3
• Selling price	• 30-46	• 35-61	• 42-80
• Profit margin (%)	• 13-20	• 10-17	• 10-25
Wholesaler			
• Purchase price	• 30-46	• 35-61	• 45-80
• Other costs	• 2	• 2	• 2
• Selling price	• 33-49	• 38-64	• 48-83
• Profit margin (%)	• 2-3	• 2-3	• 1.2-2.1
Retailer			
• Purchase price	• 33-49	• 38-64	• 48-83
• Other costs	• 2	• 2	• 2
• Selling price	• 40-56	• 45-71	• 55-90
• Profit margin (%)	• 9-13	• 7-11	• 6-9

Notes: Prices and costs are in Tk. per Kg and profit margin is in percentage.

The cost dynamics analyses reveal information on the breakdown of production costs at the grower level and marketing costs from growers to retailers. The grower-level cost analysis highlights that seeds, fertilizer and pesticides, labor, and land lease constitute 25-35 percent, 25-30 percent, 15-20 percent, and 20 percent of production costs, respectively[5]. The local traders or Forias typically bear the packaging and transportation costs of selling potatoes to the local wholesaler or Arathdar, amounting to Tk. 2.5 per Kg. Before transporting potatoes to urban wholesalers, the Arathdar pays for repackaging, transportation, store rent, labor wage, and Ijara charges a total of Tk. 6 per Kg. Another major cost component is the cold storage charge, which varies between Tk. 5 and Tk. 6 per Kg, depending on the quantity of potatoes stored. Urban wholesalers and retailers usually pay for store or shop rent and transportation, each incurring average costs of Tk. 2 per Kg.

Table 3 presents a cross-sectional analysis of the cost and price movements across different actors involved in the potato value chain. The nature of the commodity dictates that a significant value addition

[4] $Profit\ Margin(\%) = \frac{Sales - Cost\ of\ Goods\ Sold}{Sales} \times 100$

[5] Lately, increased seed prices, both domestic and imported, have served as a deterrent for reasonable production costs.

occurs at the growers' end; they incur Tk. 17 per Kg on average for growing potatoes. This finding is analogous to a similar study by DCCI (2024) that reports an average production cost of Tk. 17.21. Table 1 also shows that growers earn a 6-51 percent profit margin from selling land potatoes. They earn the highest profit margin from selling house potatoes among all actors and all sources of sale, reaching as high as 66 percent. DCCI (2024) also documents a significant price escalation at the producer level, marking an approximate margin of 87.05 percent. Arathdars' profit margins range from 10 to 25 percent, depending on the origin of the potato sale, whereas those of Forias hover around 2 percent. Interestingly, the study observes that other actors down the potato value chain — wholesalers and retailers — earn inconsequential returns regardless of the origin of the potato sale.

Looking at the price level, Table 3 indicates that the retail prices of land potatoes, house potatoes, and cold storage potatoes per Kg go as high as Tk. 56, Tk. 71, and Tk. 90, respectively, significantly exceeding the production costs. Importantly, a significant portion of this price and cost differential goes to the growers or farmers, challenging the common belief that intermediaries play a crucial role in price differentials, as documented in some recent studies. For instance, a finance division report states that elevated costs in staples such as rice, onion, and potato result from supply chain inefficiencies, calling for improving storage and distribution networks for key commodities (The Daily Star, February 10, 2025). CPD (2025) echoes a similar concern, highlighting an integral role played by intermediaries in influencing prices, further adding that price fluctuations stem from post-harvest losses.

The survey findings also show that the price at the cold storage gate makes a big difference at the post-harvest closure, reflecting speculation driven by a demand-supply mismatch, which partly stems from the scarcity of substitute commodities such as vegetables. Notably, the study also unearths that all actors, including producers, can speculate.

The survey seeks a convincing case for an unusual price surge in late November 2024. The supply naturally decreases at the post-harvest closure in November. The survey finds that floods in some regions during August-October of that year caused non-trivial damage to vegetable harvests, creating extra demand for potatoes. These two forces collectively contributed to the high potato prices back then, while DCCI (2024) indicates that excessive post-harvest damage and inadequate storage facilities are responsible for the price increases.

7.2 Recommendations

Overall, this study's findings suggest that the competent authority within the government should estimate aggregate potato demand and the volume of cold storage potatoes and, based on these estimates, encourage stokers to release potatoes from cold storage in phases. Further, the authority may consider

setting a month-wise cold storage gate price ceiling, particularly from July to November, while considering production and marketing costs. These two policies could attenuate the build-up of price pressure, particularly towards the end of the post-harvest period. Additionally, potato imports during October-November could dwarf price increases, addressing the supply crunch. Finally, this study recommends closely monitoring the potato seed supply to arrest abnormal price hikes.

The unusual price rise in 2024, acting as a trigger, incentivizes many farmers to expand potato cultivation in 2025, raising the prospects of much higher production this year. Further, 2025 has already seen an increase in seed prices and lease rent, driving up production costs. Therefore, the study anticipates an abundant potato supply this year, leading to stable prices. However, the farmer may incur losses due to increased production costs, heightening the need for government intervention.

To sum up, the study notes that the production cost was moderate, growers earned expected profits, stockers, including growers, could exploit market forces, post-harvest losses were minimal, and a sizable profit margin enticed new cultivators this season, potentially leading to overproduction.

8. Survey Results and Discussions on Onions

Though onion cultivation is widespread across the country, the top five onion-producing districts—Faridpur, Pabna, Rajbari, Rajshahi, and Kushtia—accounted for 72.2 percent of national production in 2022–23 (BBS, 2023). This study utilizes primary data collected from Rajbari and Faridpur districts through field surveys and structured interviews with farmers, intermediaries, wholesalers, and retailers.

8.1 Types of onion and harvesting time

The onion production cycle in Bangladesh consists of different varieties, primarily Murikata and Hali onions. Muricata onions are cultivated between October-November to mid-December and harvested from December-January to mid-February. Muricata onions are highly perishable and difficult to store. In contrast, Hali onions are planted from October-November to mid-December and harvested between March- April. Hali onions have a longer shelf life and can be stored for up to 10 months using traditional or modern storage methods. Hali onions dominate the annual onion supply in Bangladesh.

8.2 Data collection methodology

The survey was conducted over twelve days from January 5 to January 16, 2025, in Rajbari and Faridpur districts—ranked as the first and third highest onion-producing districts in FY23, respectively (BBS, 2023). The fieldwork coincided with the harvesting season of “Muricata onion,” enabling the research team to capture relevant insights at a critical time in the production cycle.

Data was collected through in-person interviews and field visits, aimed at gathering both qualitative and quantitative information on the production, distribution, and market dynamics of Muricata onions. A total of 41 respondents participated in the survey, including 15 farmers, 15 Foria/Bepari (intermediary traders), six onion wholesalers (Aratdars), and five retailers. The collected data was systematically analyzed using statistical tools to derive quantitative insights, while thematic analysis was employed for qualitative data. This mixed-methods approach provides a comprehensive understanding of the Muricata onion market.

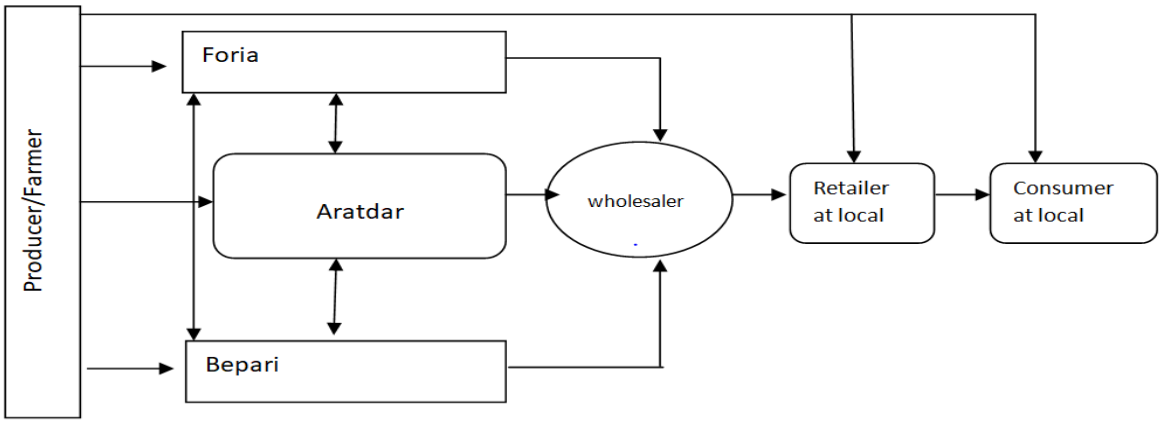
During harvesting, onion growers typically transport their produce directly from the fields to local Haats—open marketplaces where producers from various villages gather to sell their onions in bulk. Buyers, including Bepari (intermediary traders) and Aratdars (wholesalers), purchase the onions through negotiation and bargaining. The survey team took advantage of this setting to conduct interviews with growers at the Haats, allowing them to engage with producers from multiple locations. Since Haats are scheduled on different days in different locations within a given Upazila, the team attended the Haat each day at the location where it was being held. In addition to marketplace interviews, the team also visited villages and onion fields where Muricata onions were actively being harvested. This allowed for direct observation and engagement with farmers at the point of production. Moreover, Bepari/Foria and Arathdars, present at the Haats, were also identified and interviewed to ensure a comprehensive understanding of the supply chain and market interactions. In addition, the survey team visited local marketplaces to interview retailers.

After completing fieldwork in Rajbari and Faridpur, the team visited Shyambazar and Karwan Bazar—two of the largest wholesale onion markets (Paikar) in Dhaka—to observe the price-setting mechanisms in urban contexts. They also interviewed several retailers in urban Dhaka to capture insights from the final link in the distribution chain. The study aims to trace the entire price-setting process—starting from growers to Bepari, then from Bepari to Aratdar, and finally from Aratdar to wholesale markets in Dhaka—culminating at the local retail level. This holistic approach helps map the flow of Muricata onions from farmer to table and understand the dynamics influencing pricing across the supply chain.

8.3 Supply Chain and its Actors

The supply chain plays a very important role by connecting the producers to consumers. The onion supply chain in Bangladesh is composed of five types of intermediates - Foria, Bepari, Arathdar, wholesaler, and retailer. Diagram 4 shows the downstream supply chain network of onion production in Bangladesh. In the onion supply chain in Bangladesh, various actors play distinct roles.

Diagram 4: Actors in the onion supply chain found by the study



Forias are small traders who procure onions from growers in small quantities and supply them to Beparis, retailers, and consumers. They operate with limited capital and handle relatively small volumes of produce. Beparis are professional traders who purchase onions in large quantities from growers and Forias and then supply them to Arathdars. Arathdars are large business establishments that act as commission agents, linking Beparis and retailers. They manage fixed establishments and handle large volumes of onions. Wholesalers receive supplies from Arathdars and sell onions to retailers or large consumers. Retailers are the final suppliers in the chain, providing fresh onions directly to consumers.

In the case of Muricata onion, producers bear the highest risk among all the actors. If production goes well and the onion prices are favorable, they can profit. However, if the cost of production exceeds the selling price, producers incur losses. Retailers, on the other hand, face risk as well, particularly when they store goods for longer periods. They may face financial losses if prices suddenly fall, but they could profit if prices rise. For consumers, the price is largely out of their control—they must pay whatever the market price is. A low price brings less financial burden, while a high price creates more financial pressure. In this supply chain, the intermediary actors—Forias, Beparis, Aratdars, and wholesalers—typically work on a commission-based model.

8.4 Cost and price movement in the supply chain

Table 4 presents a cross-sectional analysis of the cost and price movements among various actors involved in the Muricata onion value chain and price setting. The survey data show that the average cost of production for growers is Tk. 54 per Kg, while the average selling price is only Tk. 41 per Kg, resulting in an average loss of 24%. The selling price ranges from a minimum of Tk. 35 to a maximum of Tk. 48 per Kg.

Table 4: Price change mechanism (Muricata, Tk. per Kg)

Grower	
• Average Production Cost	54
• Selling Price	41
• Profit Margin (%)	-24%
Foria/Bepari	
• Average cost	2.0
• Selling Price	43.5
• Profit Margin (%)	1.2%
Wholesaler	
• Transport cost	2.0
• Other cost	0.5
• Selling Price	47
• Profit Margin (%)	2.2%
Retailer	
• Selling Price	50-55
• Profit Margin	6%-17%

To assess the changes over time, the team also collected data on the previous year's production costs from the growers. In the previous season (January–February 2024), the average production cost was only Tk. 31 per Kg, while the average selling price was Tk. 85 per Kg, yielding an exceptionally high-profit margin of approximately 174% in the last season. This comparison indicates that the cost of production has increased significantly this year, while the selling price has dropped substantially.

Several factors contributed to the shift in the onion market this year. Last year's low production costs were partly due to the low price of Guti seeds. However, the unusually high profits earned by growers during that season led to a sharp increase in seed prices this year, accompanied by a notable rise in labor costs and land rent. Additionally, two episodes of heavy rainfall during the growing season damaged crops, further increasing production expenses. On the other hand, the high selling price last season was largely driven by a supply shortage, which persisted until the government allowed onion imports. The timing of this shortage played a crucial role in the abnormal price spike, enabling growers to earn exceptional profits in the previous season.

This year, however, the situation is different. The survey team tries to find out why the selling price of Muricata onion is low in local markets ("haats"). Talks with officials from the regional Department of Agricultural Extension (DAE) showed that more farmers grew Muricata onions this year, using more land

than before. Data from DAE offices in Rajbari and Faridpur confirmed this, showing that the area used for Muricata onion farming went beyond the target, and production also crossed the goal by January 2025, even though two episodes of heavy rain during the growing season damaged some crops.

On one hand, the increase in input costs and weather-related shocks significantly raised the production cost of Muricata onions this year. On the other hand, driven by the high profits experienced last season, more farmers cultivated Muricata onions on a larger scale, resulting in an oversupply. This oversupply led to a decline in the selling price. It is important to note that Muricata onions, due to their high moisture content, are highly perishable and cannot be stored for long. As a result, growers were compelled to sell their harvest quickly, even at prices lower than their production costs.

Beyond the growers, the study also looks at the role of intermediaries such as Beparis/Forias, Aratdars, and Wholesalers, and found that they mostly operate on a commission-based system. At the Bepari or Aratdar level, the main expenses include repacking, labor, storage rent, and Ijara (lease) charges—averaging around Tk. 2.0 per Kg. After covering these costs and paying the purchase price to farmers, they typically add a commission of Tk. 0.5 per Kg.

Wholesalers are the ones who bear the transportation cost, along with other expenses, to bring onions from the production areas to the paikari (wholesale) markets in different districts. The team visited Shambazar and Kawran Bazar, two major wholesale onion markets in Dhaka city. Interviews with wholesalers reveal that transportation costs (e.g., truck rental) range from Tk. 2.0 to 3.0 per Kg, depending on the distance. In addition, they incur another Tk. 0.5 per Kg as labor and storage costs. Including a profit margin of Tk. 1.0 per Kg, wholesalers sell Muricata onions at Tk. 47.0 per Kg, earning an average profit margin of 2.2%.

At the retail level, interviews with shop owners show that during the survey period, the average purchase price of Muricata onion was Tk. 47.0 per Kg, and the average selling price ranged between Tk. 50 to 55 per Kg, resulting in profit margins between 6 percent and 17 percent.

The profit margin analysis shows that while actors beyond the farmer earn modest profits, they face relatively low risk. They can pass most of their costs downstream and are less exposed to price volatility, unlike farmers whose profits depend heavily on market fluctuations and rising input costs. In contrast, Beparis and Aratdars enjoy stable earnings through fixed commissions.

8.5 Findings and Recommendations

During the time of the survey, Muricata onion harvesting was at its peak. This variety accounts for approximately 14 percent of total onion production in Rajbari and Faridpur districts. Unlike the more durable Hali onion, Murikata is highly perishable and cannot be stored for long periods. As a result, farmers are compelled to sell it within 2–3 days of harvesting.

Many people believe that onion prices are often manipulated by hoarding and dishonest traders who want to make an extra profit. However, the survey found that the price of Murikata onion mostly changes based on supply and demand. Due to its highly perishable nature, farmers are often forced to sell quickly at unfavorable prices to avoid spoilage.

One potential solution is to promote the preservation of Murikata onions in the form of onion paste, which would extend shelf life, reduce post-harvest losses, and allow farmers to sell their products more flexibly throughout the year. Additionally, carefully timed imports during the off-peak production periods—such as September or October, when local supply is naturally low—can help bridge the gap between supply and demand. This approach ensures market stability without adversely affecting domestic producers, who are not actively harvesting during these months. Moreover, the state can play a vital role by ensuring the widespread dissemination of accurate and timely price information. Farmers and traders often fall victim to misinformation or rumors, which can distort decision-making and create unnecessary market disruptions. Government-led initiatives to share verified market data through digital platforms, mobile alerts, or local extension offices would enhance transparency and allow all actors in the value chain to make better-informed choices.

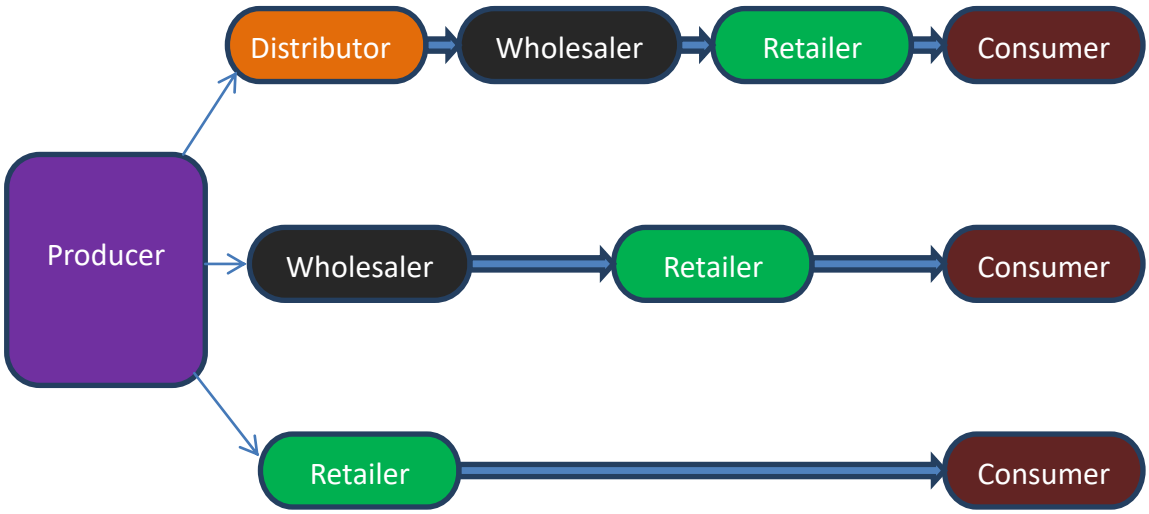
9. Survey Results and Discussions on Eggs

This study was conducted in three districts, Mymensing, Magura, and Gazipur. These districts were chosen according to the prevalence of egg producers. Several areas of these districts have a high concentration of egg production. According to the production concentration, the survey team visited 6 (six) Upazilas, namely Fulpur, Muktagacha, Mymensingh Sadar, Sreepur, Gazipur Sadar, and Magura Sadar, from three districts. The team also surveyed Karwan Bazar and Kaptan Bazar in Dhaka city. Among these five upazilas, the team randomly chose egg producers, middlemen, wholesalers, retailers, and consumers to conduct the study.

9.1 Identification of egg value chain

The egg value chain is formed by different channels (Diagram 5). The first channel shows three middlemen (distributors, wholesalers, and retailers), the second channel shows two middlemen (wholesalers and retailers), and the last channel shows only one middleman (retailers).

Diagram 5: Egg value chain



9.2 Sample Selection, sample size and data collection

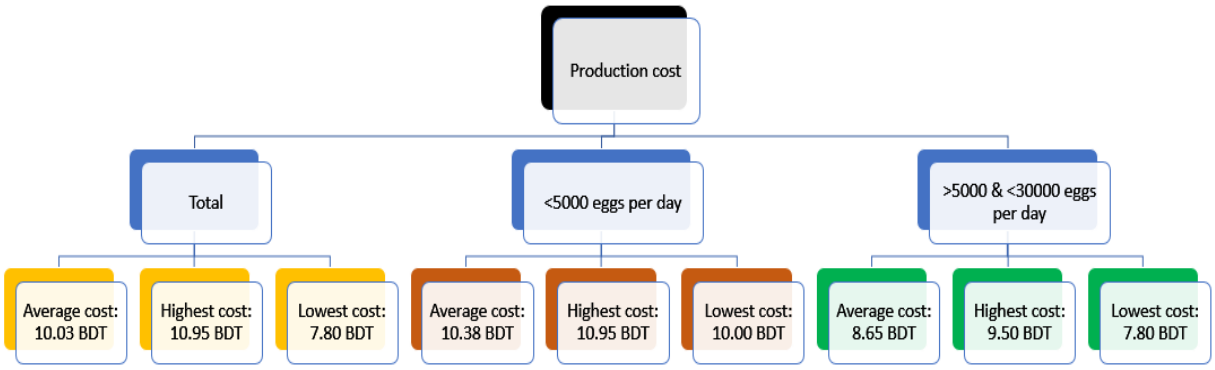
The study used the network sampling method to collect data. First, the study team appeared in the study area, randomly selected egg producers, and interviewed them with a predesigned semi-structured questionnaire. Then, the team detected the next stakeholder in the egg value chain and interviewed them, and this process continued until retailers. Hence, the sample size consists of 9 (nine) producers, 3 (three) distributors, 5 (five) wholesalers, 5 (five) retailers, and 10 (ten) consumers.

Data were collected through face-to-face interviews at the farms and shops. The questionnaire consists of personal information of each stakeholder, including their experience, education, age, etc. The producers' questionnaire consists of production costs (feed, hens excluding salvage value, medicines including vaccinations, labor, transportation, energy, fixed costs – shed, cage, and logistics), wastage (brokerage of eggs & death of hens), selling price, causes of production cost hike, and recommendations for ensuring stability in the egg market. The rest of the questionnaires consist of procurement costs, costs added to send it to the next stage (transportation, labor, shop/warehouse rent, wastage – brokerage), profit margin, challenges of egg markets, and recommendations for ensuring stability in the egg market.

9.3 Cost and price movements in the supply chain

The production of eggs varies according to the nature and size of the producers. The study divides producers into three groups based on their size: (1) those who produce less than 5,000 eggs per day, (2) those who produce greater than 5,000 but less than 30,000 eggs per day, and (3) those who produce greater than 30,000 eggs per day. The team could not collect data from the large producer group, group 3. Diagram 6 shows that the total average production cost of the two groups is Tk. 10.03 per piece of egg, where the highest cost is Tk. 10.95, and the lowest cost refers to Tk. 7.80. The average production cost of farms that produce less than 5,000 eggs per day is Tk. 10.38, where the highest cost is Tk. 10.95, and the lowest cost consists of Tk. 10.00. The average production cost of the second group is Tk. 8.65, where the highest cost is Tk. 9.50, and the lowest cost consists of Tk. 7.80.

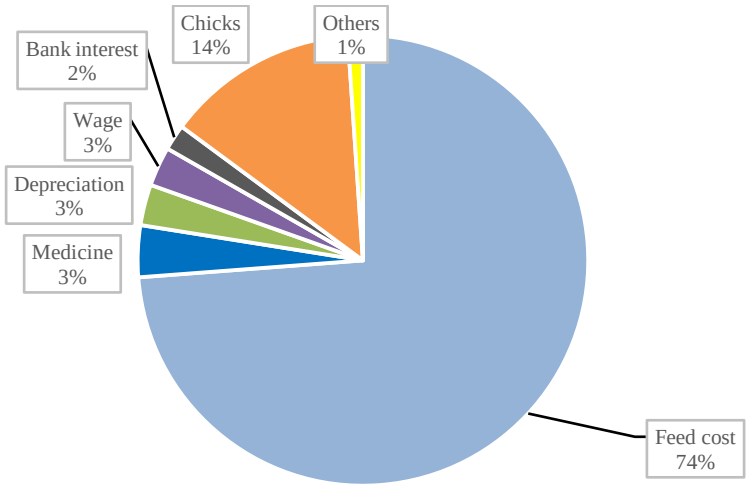
Diagram 6: Production cost of eggs based on farm size



While investigating the reasons for differences in the production costs among farms, the team found several factors that affect production costs. For instance, small producers take egg production as a second source of income, and most of the farms are run by family members. Hence, a lack of proper care leads to less production and high wastage. Moreover, small-sized farms buy chicks, feed, and medicines from dealers on credit at higher prices. Also, small farms have higher average costs for others (electricity, transportation, maintenance of shed & cages) than group 2 farms. On the other hand, medium-sized farms have advantages in terms of the purchase price of feed, chicks, and medicines because they mostly collect those directly from producers. Moreover, medium-sized farms that produce feed by themselves have the lowest production costs (Tk. 7.80). Segregating the production costs according to the cost heads to reveal the impact of each cost head on the production costs, Chart 6 shows that 74 percent of the egg production costs are feed costs, 14% of costs consist of chicks, and the rest of the cost heads are 12% only (Diagram

6). It revealed that feed prices have a significant impact on egg production costs. In this regard, the survey team also examined the feed prices and found that there are generally three sources of feed such as own feed (farms that have feed mills), non-branded feed (farms collected from local feed mills), and branded feed (automated feed mills, i.e., Kazi farms, Nourish Bangladesh, Paragon poultry, C.P., etc.).

Chart 6: Categorization of production costs according to cost heads



The prices of feed may vary according to their sources (Diagram 7). A farm that uses its own feed costs Tk. 46-48 BDT per Kg, non-branded feed costs Tk. 52-55 per Kg, and branded feed costs Tk. 59-62 per Kg. It indicates that farms that use their own feed incur a cost of Tk. 13-14 per Kg which is less costly than branded feed and Tk. 6-7 per Kg than non-branded feed. This feed price enables them to produce eggs at a lower cost (7.80 BDT).

Diagram 7: Feed costs according to their sources (Tk./Kg)

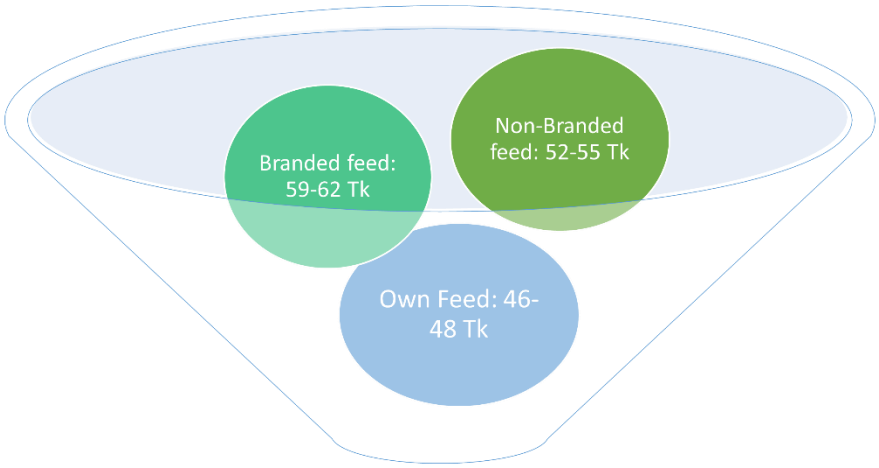
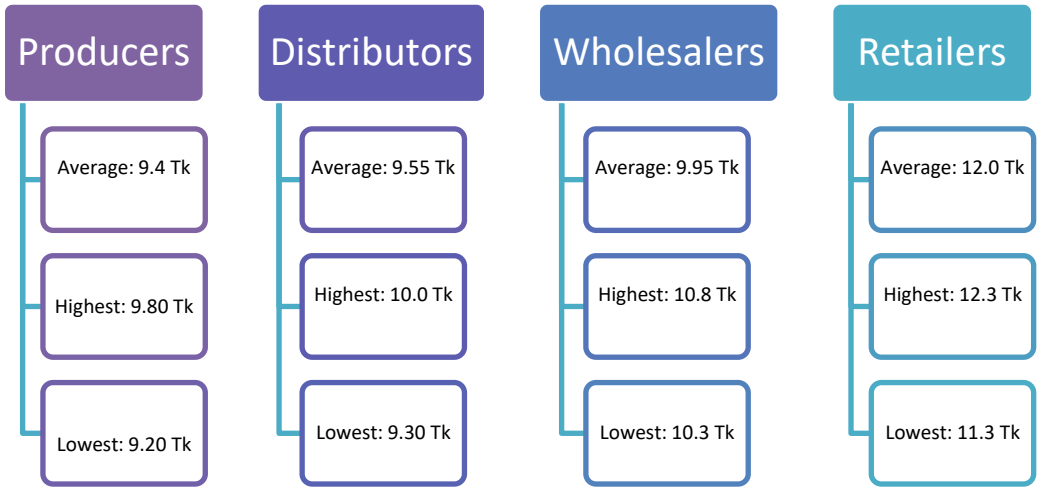


Diagram 8 shows that the average procurement cost for distributors is Tk. 9.40 per egg, for wholesalers, Tk. 9.55, and for retailers, Tk. 9.95. The highest procurement cost for distributors is Tk. 9.80 BDT, for wholesalers, Tk. 10.00, and for retailers, Tk. 10.30. The lowest procurement cost for distributors is Tk. 9.20, for wholesalers, Tk. 9.30, and for retailers, Tk. 9.80.

Diagram 8: Procurement costs/ purchasing prices (per egg)

The prices of eggs were lower during the survey period in January 2025 compared to September/October 2024. While asked the participants about lower prices of eggs, most of them replied that due to the lower prices of seasonal vegetables, the demand for eggs was less, which led to lower prices of eggs. Hence, the survey team asked the participants for current selling prices (Diagram 9) and selling prices during peak periods (Diagram 9) at every stage of the egg value chain. Diagram 8 shows that the average selling price during the survey period for producers was Tk. 9.40 per egg, for distributors, Tk. 9.55 per egg, for wholesalers, Tk. 9.95 per egg, and for retailers, Tk. 12.00 per egg.

Diagram 9: Selling price of eggs during survey period (per egg)



The highest selling price during the survey period for producers was Tk. 9.80 per egg, for distributors is Tk. 10.00, for wholesalers is Tk. 10.30, for retailers is Tk. 12.30, and the lowest selling price for producers is Tk. 9.20, for distributors is Tk. 9.30, for wholesalers is Tk. 9.80, for retailers is Tk. 11.30. On the other hand, Diagram 10 shows that the average selling price during peak demand for producers is Tk. 11.94 per egg, for distributors, Tk. 12.10 per egg, for wholesalers, Tk. 12.15 per egg, and retailers, Tk. 14.55 per egg. The highest selling price during peak demand for producers is Tk. 12.90, for distributors is Tk. 13.05, for wholesalers is Tk. 13.10, for retailers are Tk. 15.10, and the lowest selling price for producers is Tk. 11.50, for distributors is Tk. 11.70, for wholesalers is Tk. 11.80, for retailers is Tk. 14.30.

Diagram 10: Selling price of eggs during the peak demand

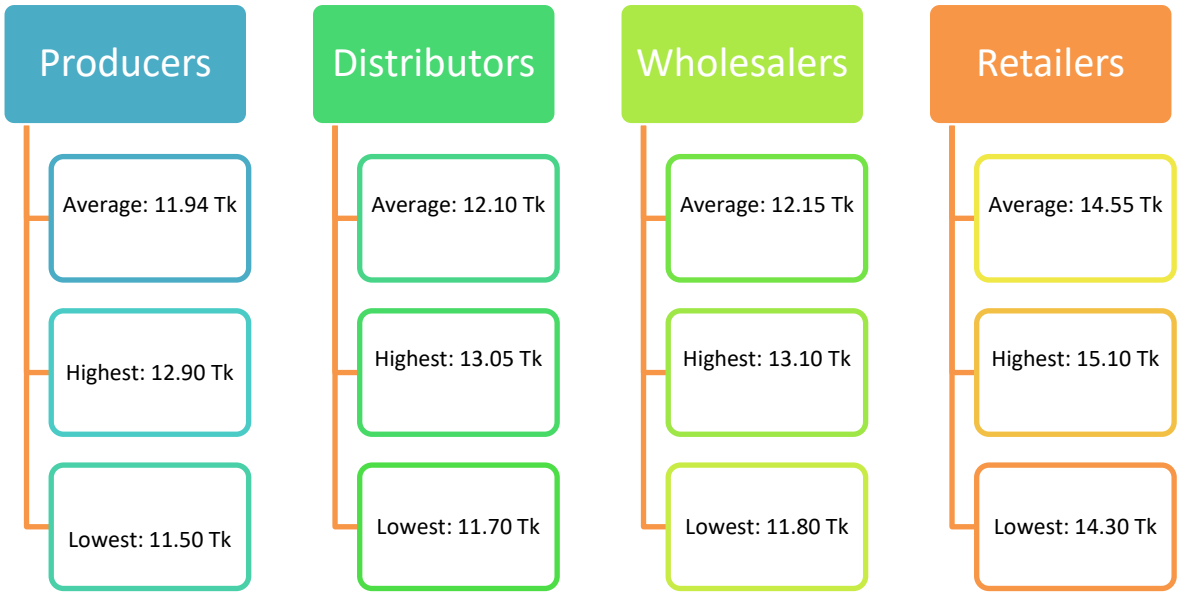
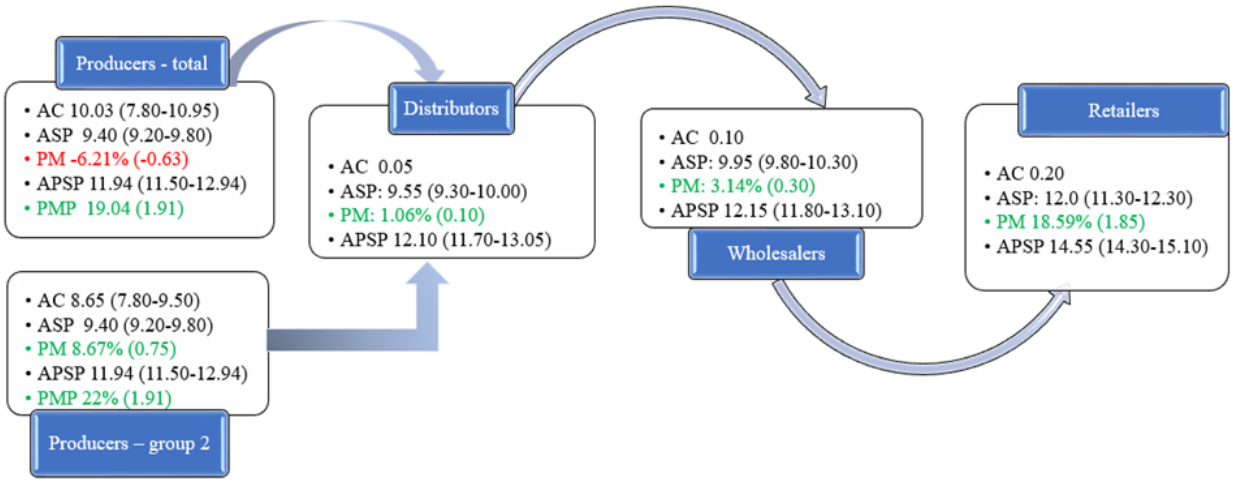


Diagram 11 shows that total producers (group 1 & group 2) incur an average 6.21 percent loss while group 2 incurs an average 8.67 percent gain during the survey period. On the other hand, at the peak demand market, the average gain for all producers is 19.04 percent, and for group 2 producers is 22 percent. This indicates that all producers have a remarkable gain in the bull (peak demand) market, while due to the advantage in production cost, group 2 producers secure a reasonable profit margin even in a bearish (survey period) market demand. It resulted in the winding up of many Group 1 farms due to the instability of the egg market. Besides, all other actors of the egg value chain incur moderate to high gains irrespective of the market status. Diagram 11 shows that the average profit for distributors in the bearish market is 1.06 percent, for wholesalers 3.14 percent, and for retailers 18.59 percent.

Diagram 11: Price change mechanism and profit margin at each stage of value chain

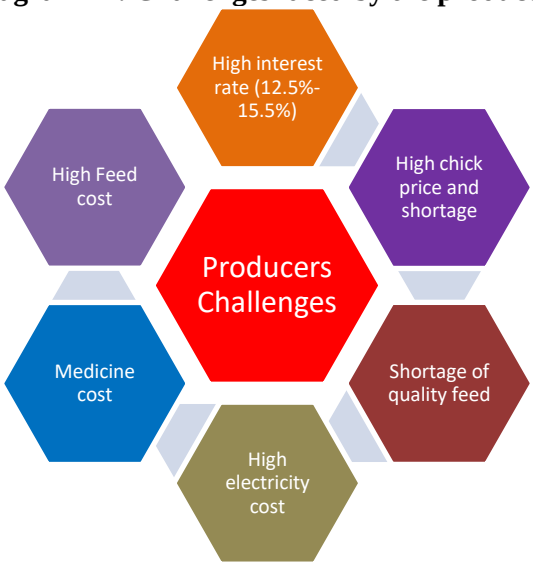


Note: AC- average cost, ASP- average selling price, PM- profit margin, APSP- average selling price at peak demand, and PMP profit margin at peak demand

9.3 Risk and challenges

The study finds that producers are compelled to take the market price of the eggs irrespective of their production costs, and the rest of the value chain actors add their cost and profit to the market price and then sell it to the next actor. Hence, there is little chance of incurring a loss in the egg business except for producers. The supply side should be stable to stabilize the egg market. If producers incur a loss, there is a high chance of a destabilized supply of eggs in the market, which leads to a sudden shortage of eggs and high inflation in the eggs market. The survey team asked the producers about their main challenges in egg production and how to lower egg production costs. The challenges are summed up in Diagram 12. The challenges faced by the producers are instability in feed and chick prices, which have more than doubled in FY24 compared to FY16. Diagram 11 shows that the feed cost was Tk. 1500 per 50 Kg bag in FY16, which increased to Tk. 3200 in FY24. On the other hand, the chick price was Tk. 20-22 per piece in FY16, but it increased to Tk. 60-100 FY24. Chart 9 shows that 88% (feed 74% + chicks 14%) of the total production cost lies on feed and chick costs. It indicates that 88% of the total production costs increased more than double in 8 (eight) years. Controlling absurd price hikes for feed and chicks can lead to lower production costs and inflation in the egg market. The other challenges faced by the producers are higher medicine and vaccination costs, higher bank interest rates, high electricity costs, and a shortage of skilled laborers.

Diagram 12: Challenges faced by the producers



Note: Comparative feed (per 50 Kg) & chicks (per piece) price in three fiscal years in BDT

9.4 A case study: sustainable model of medium-sized poultry farm

To stabilize the egg market, an uninterrupted supply of reasonably priced eggs throughout the year is a prerequisite. Sustainable poultry farms are required to fulfill this requirement. Thus, this study presents a model that can sustainably produce eggs with lower production costs.

The Rafine poultry farm: It is a medium-sized farm that has a capacity of rearing 30,000 chicks. It can produce an average of 20,000 eggs per day. The specialty of this farm is: (i) they have their own feed mills that produce their required feed, and (ii) they have a bio-gas plant from which they provide 160 gas connections to the locals at a monthly rent of 900 per connection for uninterrupted gas supply. As they produce their required feed by themselves, it costs only Tk. 46-48 Kg, which is much lower than the branded feed. Besides, the quality of their feed is similar to branded feed, giving them the maximum amount of production. Due to the advantages in the feed costs, their production cost is Tk. 7.80 per egg, which is much lower than the average production costs of all farms, which is 10.03 per egg, and even lower than the average costs of group 2 (medium-sized farms), which is Tk. 8.65 per egg. These advantages in production costs secured them a 17.02% (Tk. 1.6) average profit, even in the bearish market. Moreover, they have a stable monthly income of Tk 144,000 from bio-gas, enhancing their resilience against any shocks (environmental, diseases, etc.). However, they face some challenges, such as the higher price of chicks. Since they do not use chick producers' feed, they have to collect chicks from dealers at higher prices (Tk. 95-120 per chick), whereas the producers' price of the same chick is Tk. 60-65. The price of medicines and vaccinations is also much higher compared to 2021 and earlier. They have

the opportunity to expand farms and produce more bio-gas, but financing is an issue. Before 2023, the interest rate for farming finance was 4% - 9%, but now it is 12.5% - 15.5%.

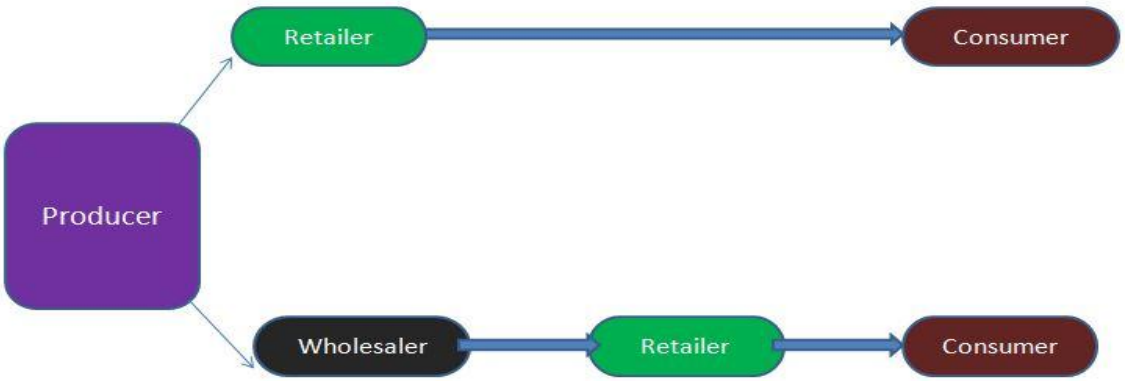
9.5 Recommendations

A distortion-free value chain is essential for stabilizing the egg market. In Bangladesh, the study findings indicate that egg value chains are disrupted mainly by the feed and chick costs. To stabilize the egg markets, the study proposes to provide sufficient financing facilities to medium-sized farms to build their own feed mill and bio-gas plant. Bangladesh Bank can allot funds to provide such financing facilities at a concessional rate for establishing around 1000-2000 sustainable medium-sized poultry farms. Secondly, almost 70% of the feed ingredients (maize & soybean) and 80% of the medicines and vaccines are imported from abroad. So, it is reasonable to scrutinize the import documents properly to find the international price during the import period. Moreover, the import duty of those ingredients should be carefully reviewed and reduced. Thirdly, relevant authorities should conduct regular inspections of the feed and chick producers to ensure the authenticity of the feed price and find out if any malpractice occurred at their end.

10. Survey Results and Discussions on Broiler Chicken

This pilot study on broiler farming and marketing selected some areas of Mymensingh and Gazipur districts for field survey. In Mymensingh, the study covered two Upazillas, namely Phulpur and Muktagacha and in Gazipur District it covered two Upazilla namely Gazipur Sadar and Sreepur to collect data from producers. Gazipur is the highest producing district in Bangladesh for commercial poultry production. The study team also visited Arathdar, wholesaler and consumer in Karwan Bazar in Dhaka district. The data were collected in January 2025 from farmers, Forias, wholesalers and consumers through a structured questionnaire survey aimed at achieving the study objectives. The value chain of broiler chicken is similar to that of egg. Diagram 13 shows that there are only two channels in the broiler supply chain between producer and consumer. The first channel has a retailer that serves as a middleman before selling to the consumer. In the second channel, there are two middlemen, wholesalers and retailers, who can purchase broilers directly from wholesalers.

Diagram 13: Broiler poultry supply chain network



10.1 Cost and price dynamics in the value chain of broiler chicken

Table 5 shows that farmers carry the majority of the production costs, such as feed, labor, and other inputs. They have a lower profit margin than the other stakeholder groups. The wholesaler in Mymensingh incurs a low handling cost and makes a moderate profit margin. In the final stage of distribution, prices rise significantly, with a 10% profit margin. This shows that retail and urban market dynamics have a significant influence on broiler prices. Broiler prices rise dramatically at each stage, with the biggest increase seen in Dhaka's retail market. Broiler prices fluctuate depending on availability, demand, and transportation costs.

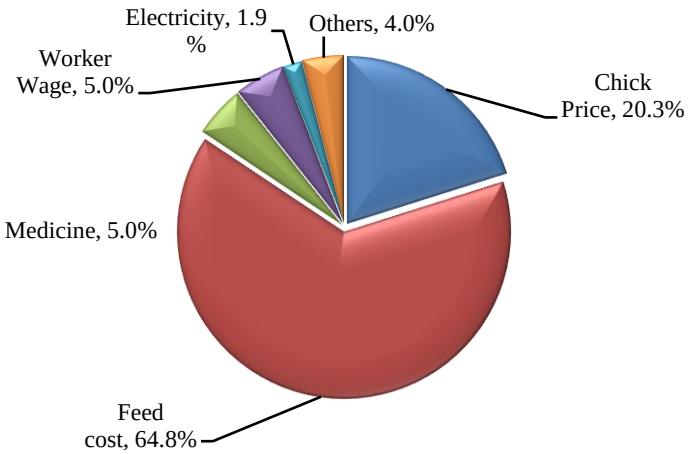
Table 5: Cost and price movements across actors in the value chain (Tk./Kg)

	Grower/ Farmer	Wholesaler in Mymensingh	Wholesaler in Dhaka	Retailer
Average costs (Price range)	155 (144-165)			
Average cost added by different layer		5	15	
Selling Price (Price range)	163 (150-175)	166 (160-172)		200
Profit Margin (%)	5.2%	4.0%	10.0%	

This pie chart (Chart 7) depicts the cost distribution of numerous factors affecting broiler production. Feed costs (64.8%) are the most major expense, accounting for over two-thirds of total costs. Because feed cost is the most important aspect, any change in feed prices could have a significant impact on broiler production costs. Chick price (20.3%) is the second greatest expense, accounting for around one-fifth of the total. This suggests that chick sourcing strategies may affect total cost efficiency. Medicine

(5.0%) and worker wages (5.0%) make equal contributions to the cost structure. Operational costs, such as salaries, medicines, and electricity, account for around 12 percent of overall costs.

Chart 7: Distribution of costs for broiler production



High costs of feed, chicks, and medicine pose challenges for producers to ensure sustained production. Compiled responses indicate that ensuring quality feed and chicks is critical in order to avoid disease outbreak such as avian influenza. Respondent producers are struggling with high interest rates (125-15.5% on bank loans which ultimately increase the cost of production.

10.2 Recommendations

To overcome the difficulties of broiler keeping and to make the business of broiler keeping more profitable in the country, the following recommendations are put forward for the improvement of existing production and trading of live broiler.

- The government should control the high price of feed and day-old chicks. They should give incentives to the private feed manufacturing factories and hatcheries, as it can be helpful to reduce the high price of feed and day-old chicks;
- Government and private research centers should try to develop an improved breed for higher production;
- Price stabilization and/or floor price schemes should be chalked out to make sure that broiler producers receive the minimum level of profits; and
- The government should increase veterinary services by supplying necessary vaccine and medicine at lower price and by establishing new veterinary care centers.

- The government should allocate funds for poultry feed, medicine, feed mills, and bio-gas plant for encouraging domestic production of raw materials.
- Respective authorities should evaluate the import duty on poultry feed and medicine and evaluate the advance income tax (AIT) and taxation policies on feed raw materials and medicine.

11. Experiences of Corporate Feed Producers on Feed Costs

Feed is the prime ingredient responsible for price instability in the chicken and egg market. Hence, the survey team visited some corporate feed producers in April 2025 to explore the costs of production, distribution, and end use. The team further discussed with them regarding the opportunities and challenges of the poultry sector of Bangladesh. The data reveal that the average raw material cost of broiler grower feed is Tk. 50.66 per Kg, the average processing and distribution cost is Tk. 11.11 per Kg, the average total cost is Tk. 61.77 per Kg, the average distributor cost is Tk. 64.25 per Kg, the average maximum retail price (MRP) is Tk. 69.75 per Kg, the average profit after tax for a feed producer is Tk. 2.30 per Kg, and the average profit for the distributor is Tk. 5.34 per Kg. Data showed that the average processing and distribution cost of a 50 Kg bag is (Tk. 11.11*50) = TK. 555.5, which seems too high. The scenario is almost the same in the layer sector where average processing and distribution cost is Tk. 9.93 per Kg. It indicates that inefficient processing and distribution systems are the reason for the high price of poultry feed. A deeper focus should be given to this sector to minimize the feed cost. Besides, officials of the companies said that a sudden high jump in the dollar price increases the import cost and this is one of the main reasons for the higher feed price. Moreover, inefficiency in port handling, such as longer time in inspection, and higher penalties for delay, is also responsible for higher feed costs. It shows that a stable foreign exchange market can contribute to a cheaper and more stable poultry feed price. It also indicates that the government should focus on strengthening efficiency in port management to stabilize feed prices.

12. Concluding Remarks and Recommendations

Overall, the pilot study identifies certain crucial cost and pricing characteristics in supply chains and provides some suggestions for stabilizing the prices of the selected agricultural products. According to the study, supply shortages are the primary cause of price increases for all agricultural products. Supply shortages typically occur during off-peak seasons and are also associated with decreased cultivation areas replaced by other profitable products, production being hampered by floods, and increased pest attacks, among others.

The report finds that a significant amount of profit is earned by the farmers, while intermediaries and wholesalers gain small margins in the case of rice and paddy production during the survey period. Forias

and Arathdars just add margin, considering their costs while not directly influencing the paddy price. However, rice millers in the supply chain play a crucial role, setting prices based on milling costs and market demand and supply conditions for paddy and rice and making profits both from rice sales and by-product income. Arathdars and retail sellers for rice, both in local and urban markets, set their prices based on supply, demand, and competition. During the period of supply shortages, both for rice and paddy, implementing a reliable and transparent price range, particularly for millers and Arathdars, is critical, and close monitoring of stocks is also needed. Floods and excessive attacks of pests, higher prices of fertilizer and pesticides, electricity, wages, and labor contribute to higher costs of production at the farmer level. Increased transportation and labor costs at the intermediary levels also lead to an increase in rice prices. The recent government requirement to use jute bags adds a new cost component, but it would provide environmental benefits. Imports of rice can play a catalytic role in stabilizing prices during shortage periods. Moreover, it creates competition for local millers. The government withdrew the import duty on rice in October 2024, and thereafter, the imported rice from India softened the price pressure of rice in January 2025. However, during the survey periods, the survey team found that importers were unable to import the required quantity of rice due to a lack of sufficient foreign currency in the country. However, the study suggests that timing is critical to adjust the import duty policy and the extent of imports, predicting the actual production losses.

In the case of potatoes, the study finds that the production cost is moderate and farmers earn an expected profit; however, they must accept the selling prices set by intermediaries such as Foria and Arathders. The survey finds that all actors, including growers and stockers in the potato supply, can exploit the prices at the cold storage gates during the post-harvest periods, reflecting speculation driven by a demand-supply mismatch. An unusual price surge in late November 2024 reflected natural supply decreases at the post-harvest closure in addition to floods in some regions during August-September of that year. The floods suppressed the vegetable harvest, which created extra demand for potatoes as a substitute and also led to an increase in potato prices. To stabilize the price pressure, government monitoring of the stock of cold storages and its timely releases in phases, while quantifying the actual demand of potatoes in the market by a competent authority, is crucial so that Arathdars or any other intermediaries in the supply chains cannot earn excessive profits. Particularly from July to November, during the end of the post-harvest period, the authority may consider setting a month-wise cold storage gate price ceiling to attenuate the build-up of price pressure. Additionally, importing during off-peak periods (October-November) can address the supply shortages without harming the local farmers. On the other hand, the unusual price surge in 2024 incentivized many farmers to expand potato cultivation in 2025, raising prospects of higher production. Therefore, the study anticipates that there would be abundant production of potatoes, leading

to stable prices. However, the farmers had to face higher production costs as prices of seed and lease rent increased because of their high demand. Therefore, government monitoring and support for adequate seed supply are essential to moderate the production costs.

The study team collected data on Muricata onions only because this variety was available during the survey period. This variety covers only around 16 percent of total onion production, and as such, the study findings do not necessarily reflect the cost and price dynamics of overall onion markets in the country. The study finds that farmers are enticed by the high profits (174%) they experienced last session (harvesting time: December 2023–mid-February 2024) to cultivate Muricata onions on a larger scale this session (cultivation time: October–mid-December 2024). Although two episodes of heavy rainfall disrupted production in some areas, the increase in the number of farmers cultivating a larger area resulted in an oversupply, which led to a decline in selling prices. Due to the highly perishable nature of the onion variety, the farmers sold their onions quickly, even at prices lower than their production costs. The survey findings suggest that farmers are the main risk takers, and their profits and losses are mostly dependent on market fluctuation and rising input costs, while other players, such as Forias, Arathdars, and retailers, face relatively low risk as they operate on a commission-based system. Similarly, this study suggests that importing onions during periods of supply scarcity, like those experienced with rice and potatoes, can alleviate price pressure. The study finds that September and October are the months of off-peak production when the local supply is naturally low. Therefore, the government can play a critical role by reducing or withdrawing import duty before September so that an abundant supply will be available during the off-peak period. This approach ensures price stability without hurting local producers, as they are not harvesting during these months. The study also suggests that the government should take initiatives to ensure widespread dissemination of accurate and timely price information, allowing all actors in the value chain to make better-informed decisions.

The study also investigates the cost and price dynamics of eggs and broiler chickens. The study finds that producers are compelled to take the market price of the eggs irrespective of their production costs, and the rest of the value chain actors add their cost and profit to the market price and then sell it to the next actor. During the survey period in January 2005, the demand for eggs was normally lower as people had a preference to eat seasonal vegetables at lower prices. The study finds that the producers are the main risk takers, and there is a chance of a destabilized supply of eggs if producers incur losses. Moreover, the cost of production varied among the producers according to the size of their businesses. Small-sized farmers buy chicks, feed, and medicines from dealers on credit at higher prices, which increase their production costs. On the other hand, medium-sized farms get advantages in the purchase price of feed, chicks, and medicines because they mostly collect those directly from producers. Therefore, during the survey period,

the small-scale producer incurred a loss, while medium-scale producers secured a reasonable profit margin during the weak demand period. However, both groups made a remarkable gain during the peak demand market. The study finds that feed is the main cost component (74 percent of production cost), impacting heavily on the production cost of eggs. However, prices of feed cost vary according to the sources of feed, such as own feed (farms that have feed mills), at Tk. 46-48 per Kg, non-branded feed (farms collected from local feed mills) at Tk. 52-55 per Kg, and branded feed (automated feed mills, i.e., Kazi farms, Nourish Bangladesh, Paragon poultry, C.P., etc.) Tk. 59- 62 per Kg. Respective authorities should take proper initiatives to minimize the feed cost. Inefficiency in port handling, such as longer inspection times and higher penalties for delay, is also responsible for higher feed costs. The study findings suggest that a stable foreign exchange market can contribute to a cheaper and more stable poultry feed price. Besides, Bangladesh Bank can allocate funds for feed mills and biogas plants to stabilize the egg markets. The other challenges faced by the producers are higher medicine and vaccination costs, higher bank interest rates, high electricity costs, and a shortage of skilled laborers.

The study findings suggest that the broiler producers are the main risk-takers, but they made lower profit margins as compared to other actors in the supply chain. For safeguarding the producers, floor price schemes should be chalked out to ensure that broiler producers receive a minimum level of profits. While broiler prices fluctuated depending on availability, demand, and transportation costs, their prices rose significantly at each stage, with the highest increase seen in Dhaka's retail markets. Feed and day-old chick costs are the key cost components. The government should incentivize the private feed manufacturing factories and hatcheries to reduce the high price of feed and day-old chicks. Bangladesh Bank can allocate funds for feed mills and biogas plants to encourage domestic production of raw materials. Respective authorities should evaluate the import duty on poultry feed and medicine, the advance income tax (AIT), and the taxation policies on feed raw materials and medicine.

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