

Dissecting the Poultry Supply Chain: The Economic Influence of Middlemen on Distribution and Pricing

MD Abdul Kader Jilane, Shiam Ibn Shoharab, Md. Mehedi Hasan, Azmain Hossain Sabbir, Siyam

University of Rajshahi

1. Abstract

The poultry industry is a cornerstone of the global agricultural sector, contributing substantially to food security and economic growth, especially in developing countries. Despite its importance, the poultry supply chain is fraught with challenges, particularly due to the presence of intermediaries or middlemen who play a pivotal role in the distribution and pricing mechanisms. This research undertakes a thorough examination of the poultry supply chain, with a primary focus on dissecting the economic influence exerted by middlemen on both distribution channels and pricing strategies.

Utilizing a mixed-methods research design, the study integrates quantitative data from industry reports, price indices, and market analyses with qualitative insights obtained through in-depth interviews and surveys with key stakeholders—ranging from poultry farmers to middlemen, distributors, and consumers. The analysis reveals that while middlemen provide indispensable services such as transportation, financing,

and market linkages, their involvement often results in significant price escalations, reduced profit margins for producers, and uneven access to markets. These effects are particularly pronounced in rural areas where producers have limited alternatives to middlemen, leading to a dependency that further exacerbates economic disparities.

Moreover, the study identifies critical points in the supply chain where the influence of middlemen is most pronounced, particularly during the distribution phase, where they hold substantial control over market access and pricing. The research also highlights the variation in middlemen's impact based on regional and market-specific factors, offering a comparative perspective across different contexts.

In conclusion, the paper suggests several policy recommendations aimed at mitigating the adverse economic impacts of middlemen. These include the promotion of direct-to-market initiatives, the establishment of cooperative models among producers, and the implementation of regulatory frameworks to prevent excessive price markups and monopolistic practices. By addressing these issues, the supply chain can be made more efficient, transparent, and equitable, ultimately benefiting producers, consumers, and the broader economy.

Key Words: Poultry Industry, Supply Chain, Middlemen, Economic Influence, Distribution, Pricing Strategies, Market Access, Profit Margins, Agricultural Sector, Policy Recommendations, Direct-to-Market Initiatives, Regulatory Frameworks, Market Linkages, Price Escalations, Economic Disparities

2. Introduction

2.1 Background of the Study

Government policies are crucial in shaping the poultry supply chain in Bangladesh, which contributes 1.6% to GDP and employs over 6 million people. Policies like subsidies on feed and vaccines, interest-free loans, and technical assistance aim to support small-scale producers and reduce their reliance on middlemen. For example, the Department of Livestock Services has provided loans to over 100,000 farmers, improving market access.

However, effectiveness varies. Only 45% of farmers access government support, often facing delays and corruption, with 30% reporting the need to pay bribes. Regulations, such as the 2015 Poultry and Livestock Feed Act, seek to enhance transparency but suffer from poor enforcement, with 40% of feed suppliers non-compliant.

Producer cooperatives and direct-to-market initiatives have improved farmgate prices by 15-20%, yet middlemen still dominate. A 2022 survey found 60% of producers rely on middlemen, who capture up to 25% of the retail price. Ongoing research is needed to address these challenges and improve the efficiency and equity of the supply chain.

Historical Context of the Poultry Industry

The poultry industry in Bangladesh has evolved from small-scale backyard operations to large industrial enterprises, driven by advances in breeding, feed technology, and disease management. Today, Bangladesh produces over 2.5 billion eggs and 1.5 million tons of poultry meat annually, making it a leading producer in South Asia.

Initially, poultry farming was a subsistence activity with minimal reliance on middlemen. However, as demand grew, especially in urban areas like Dhaka and Chittagong, intermediaries became crucial in connecting rural producers with urban markets. The 1990s saw further industrialization, with large commercial farms and integrated supply chains emerging. Despite this, middlemen remain vital, especially for the 70% of poultry still produced by small-scale farmers who depend on them to reach larger markets.

2.2 The Role of Middlemen in Agricultural Supply Chains

The role of middlemen in agricultural supply chains, including the poultry sector, has been a topic of considerable debate among scholars, policymakers, and industry stakeholders. On one hand, middlemen are often seen as indispensable players who facilitate the flow of goods from producers to markets, especially in rural areas where direct access to markets is limited. They provide critical services that can help

small-scale farmers overcome logistical challenges, access credit, and navigate market dynamics. In many cases, middlemen also assume significant risks, such as price fluctuations, spoilage, and transportation costs, which might otherwise deter producers from entering the market.

On the other hand, the presence of middlemen is frequently associated with negative economic outcomes, particularly for producers and consumers. Middlemen often have significant bargaining power, allowing them to dictate prices and terms of trade, which can squeeze the profit margins of producers. This is especially true in cases where there are few alternatives to middlemen, leading to a form of dependency that exacerbates economic disparities. Moreover, the added costs and markups imposed by middlemen can inflate prices for consumers, reducing affordability and access to essential food products. These issues are particularly acute in the poultry industry, where the perishable nature of the products and the volatility of market prices can further complicate the dynamics of the supply chain.

2.3 Problem Statement

The economic influence of middlemen on the poultry supply chain is a critical issue that warrants in-depth exploration. While middlemen provide essential services that facilitate the movement of poultry products from farms to markets, their role in the supply chain often results in significant economic distortions. Producers, particularly small-scale farmers, frequently find themselves at a disadvantage when negotiating prices and terms of sale with middlemen, leading to reduced profitability and economic sustainability. Consumers, on the other hand, may face inflated prices and reduced access to poultry products due to the added costs imposed by intermediaries.

These challenges are compounded by the lack of transparency and regulatory oversight in many poultry markets, which allows middlemen to exert considerable control over pricing and distribution. This control can create market inefficiencies, limit competition, and exacerbate economic inequalities within the supply chain. Moreover, the impact of middlemen is not uniform across different regions or segments of the poultry industry, necessitating a nuanced understanding of their influence across various contexts.

Given the critical importance of the poultry industry to food security and economic development, it is essential to examine the role of middlemen in the supply chain and assess their economic impact. This study seeks to address these issues by dissecting the poultry supply chain and analyzing the influence of middlemen on distribution and pricing. By doing so, the research aims to provide insights that can inform policy interventions and improve the efficiency and equity of the poultry supply chain.

2.4 Research Objectives

The primary objective of this study is to explore and analyze the economic influence of middlemen on the distribution and pricing mechanisms within the poultry supply chain. Specifically, the research aims to:

1. **Examine the Role of Middlemen:** To analyze the functions and roles that middlemen play within the poultry supply chain, from farm to market. This includes understanding their contribution to logistics, credit provision, market access, and other services that facilitate the movement of poultry products.
2. **Assess the Impact on Pricing:** To evaluate how middlemen influence pricing within the poultry supply chain, particularly in terms of the price formation process, markups, and the overall cost to consumers. The study will also investigate the implications of these pricing dynamics for producers' profitability and economic sustainability.
3. **Analyze the Impact on Distribution:** To assess the influence of middlemen on the distribution of poultry products, including their control over market access and the efficiency of the distribution channels. The study will explore how middlemen affect the flow of goods from producers to consumers and the resulting economic outcomes.
4. **Identify Regional and Market Variations:** To explore how the influence of middlemen varies across different regions, market segments, and stages of the poultry supply chain. This includes analyzing differences in the role and impact of middlemen in rural versus urban markets, small-scale versus large-scale operations, and different geographic regions.

5. **Provide Policy Recommendations:** To develop policy recommendations aimed at mitigating the negative economic impacts of middlemen in the poultry supply chain. This includes suggesting interventions that can enhance market transparency, reduce price distortions, and improve access to markets for small-scale producers.

2.5 Research Questions

To achieve the research objectives outlined above, the study will address the following key research questions:

1. **What are the key roles played by middlemen in the poultry supply chain, and how do they contribute to the overall functioning of the chain?**
2. **How do middlemen influence the pricing mechanisms within the poultry supply chain, and what are the implications for producers and consumers?**
3. **In what ways do middlemen impact the distribution of poultry products, and how does this affect market access and efficiency?**
4. **How does the influence of middlemen vary across different regions, market segments, and stages of the poultry supply chain?**
5. **What policy interventions can be implemented to reduce the negative economic impacts of middlemen and improve the overall efficiency and equity of the poultry supply chain?**

2.6 Significance of the Study

This study is significant for several reasons. First, it addresses a critical gap in the literature by providing a comprehensive analysis of the economic influence of middlemen in the poultry supply chain, an area that has received limited attention in previous research. By focusing on the poultry industry, the study contributes to a better understanding of the specific challenges and dynamics associated with this sector, which is essential for informing policy and practice.

Second, the study's findings have important implications for policymakers, industry stakeholders, and businesses involved in the poultry supply chain. By identifying the key roles and impacts of middlemen, the research provides insights that can guide the development of interventions aimed at improving market efficiency, reducing price distortions, and enhancing access to markets for small-scale producers. This is particularly relevant in the context of developing countries, where the poultry industry plays a critical role in food security and economic development.

Third, the study contributes to broader discussions on the role of intermediaries in agricultural supply chains. By examining the specific case of the poultry industry, the research provides a framework that can be applied to other sectors, offering valuable lessons and insights that can be used to address similar challenges in different contexts.

Finally, the study's focus on regional and market variations adds a nuanced perspective to the analysis, highlighting the importance of context-specific approaches to understanding and addressing the influence of middlemen. This is particularly important for policymakers and stakeholders seeking to implement targeted interventions that take into account the unique characteristics and needs of different regions and market segments.

2.7 Historical Context of the Poultry Industry

The poultry industry in Bangladesh has undergone significant transformations over the past century, evolving from small-scale backyard operations to large, industrialized enterprises. This shift has been driven by advances in breeding, feed technology, disease management, and logistics, which have collectively increased production efficiency and output. Today, Bangladesh produces over 2.5 billion eggs and 1.5 million tons of poultry meat annually, making it one of the largest poultry producers in South Asia.

In the early days, poultry farming in Bangladesh was largely a subsistence activity, with farmers raising small flocks primarily for personal consumption and local trade. The supply chain was straightforward, with minimal intervention from middlemen. However, as demand for poultry products grew, particularly in urban centers like Dhaka and Chittagong, the need for more structured and efficient supply chains became evident.

This led to the emergence of intermediaries who played a critical role in connecting rural producers with urban markets.

The industrialization of poultry farming, particularly in the 1990s, further complicated the supply chain. With the advent of large-scale commercial farms, the role of middlemen became more pronounced as they facilitated the movement of vast quantities of poultry products across regions and even countries. This period also saw the rise of integrated supply chains, where large corporations controlled multiple stages of production, processing, and distribution. Despite this, middlemen continued to thrive, particularly in regions where small-scale farming remained prevalent. Today, an estimated 70% of poultry in Bangladesh is still produced by small-scale farmers, many of whom rely on middlemen to access larger markets.

2.8 Theoretical Framework

Understanding the role of middlemen in the poultry supply chain requires a solid theoretical foundation. The study draws on several economic theories and frameworks that explain the behavior of intermediaries in markets and their impact on pricing and distribution. These theories provide a lens through which the economic influence of middlemen can be analyzed and understood.

Transaction Cost Economics (TCE) is one of the primary theories relevant to this study. TCE posits that middlemen emerge in markets to reduce transaction costs, such as search and information costs, bargaining and decision costs, and policing and enforcement costs. In the context of the poultry supply chain, middlemen reduce these costs by bridging the gap between producers and consumers, facilitating the flow of goods, and providing market information. However, TCE also suggests that the presence of middlemen can lead to inefficiencies if they exert too much control over the market, resulting in higher prices and reduced welfare for producers and consumers.

Market Power Theory is another relevant framework that explores how middlemen can influence prices and distribution through their control over market access. Middlemen with significant market power can manipulate prices by controlling supply, creating artificial shortages, or colluding with other intermediaries.

This can lead to price inflation and reduced competition, particularly in markets with few alternative distribution channels. In the poultry supply chain, market power can be particularly problematic in regions where producers have limited access to direct markets and are heavily reliant on intermediaries.

Principal-Agent Theory also provides insights into the relationship between producers and middlemen. This theory examines the challenges that arise when one party (the principal, in this case, the producer) delegates tasks to another party (the agent, the middleman) who has different objectives and more information. This information asymmetry can lead to moral hazard, where middlemen act in their own interests rather than those of the producers, resulting in unfavorable outcomes for the latter.

2.9 Significance of the Poultry Industry

The poultry industry is not only a major contributor to the global economy but also plays a crucial role in the livelihoods of millions of people, particularly in developing countries. In many regions, poultry farming is a key source of income for smallholder farmers, providing them with a steady income and contributing to rural development. The industry is also significant in terms of its contribution to food security, as poultry products are a major source of affordable protein for large populations.

In developing countries, the poultry industry is often characterized by a dual structure, where large, industrialized operations coexist with small-scale, family-run farms. This dual structure creates unique challenges and opportunities within the supply chain. Large-scale producers typically have access to integrated supply chains that allow them to bypass middlemen and distribute their products directly to retailers and consumers. In contrast, small-scale producers often lack the resources and market access needed to distribute their products directly, making them heavily reliant on middlemen.

The economic significance of the poultry industry also varies by region. In Asia, for example, poultry farming is a major agricultural activity, with countries like China, India, and Bangladesh being among the largest producers of poultry products. The industry in these regions is often characterized by a high degree of fragmentation, with numerous small-scale producers operating alongside a few large corporations. This

fragmentation increases the importance of middlemen, who play a crucial role in aggregating products from small producers and facilitating their movement to urban markets.

In Africa, the poultry industry is growing rapidly, driven by increasing demand for animal protein and rising incomes. However, the supply chain in many African countries is still underdeveloped, with significant gaps in infrastructure, market access, and regulatory oversight. Middlemen play a critical role in bridging these gaps, but their influence on pricing and distribution can also exacerbate economic disparities, particularly in rural areas.

In Latin America, the poultry industry is more consolidated, with a few large corporations dominating the market. However, middlemen still play a significant role in the distribution of poultry products, particularly in rural and remote areas where direct market access is limited. The influence of middlemen in these regions is often shaped by local economic and cultural factors, making it important to understand the context-specific dynamics of the supply chain.

2.10 Complexity of the Poultry Supply Chain

The poultry supply chain is complex, involving multiple stages and diverse stakeholders. It starts with feed production, a critical input reliant on raw materials like maize and soybean, which can be influenced by global markets. Breeding and hatching follow, requiring specialized knowledge, technology, and high-quality genetics.

The farming stage is the most intricate, involving the management of poultry health, nutrition, and welfare, along with compliance with food safety and animal welfare standards. Significant capital is needed for housing, equipment, and feed, posing challenges for small-scale producers.

Processing comes next, where poultry is slaughtered, processed, and packaged. This stage demands timely processing to avoid spoilage and strict adherence to hygiene and food safety standards. Finally, distribution involves transporting products to retailers or consumers, requiring careful handling and timely delivery.

Middlemen play a crucial role, particularly in regions with limited infrastructure, controlling access to distribution networks and influencing pricing and market access, ensuring products reach consumers fresh and safely.

2.11 Challenges Faced by Small-Scale Producers

Small-scale poultry producers in Bangladesh face significant challenges that hinder their competitiveness and profitability. A major issue is their limited access to markets. Unlike large-scale producers with direct links to retail chains and export markets, small-scale producers often rely on middlemen to distribute their products. This dependence results in lower prices, as middlemen negotiate terms to cover their costs and profit margins.

Access to credit and financial services is another challenge. Many small-scale producers struggle to secure financing for necessary investments, such as high-quality feed and equipment. While middlemen sometimes provide credit, this can create dependency, further weakening producers' bargaining power.

Additionally, small-scale producers often lack access to advanced knowledge and technology, affecting their productivity and poultry health. In rural areas, access to the latest breeding techniques and disease management practices is limited, with middlemen offering only basic support to maintain supply.

Producers are also vulnerable to price volatility and market fluctuations. Middlemen, with superior market information, often exploit these fluctuations, leaving small-scale producers with reduced margins and financial uncertainty.

2.12 The Role of Government and Policy Interventions

Government policies significantly impact the poultry supply chain, especially for small-scale producers. Effective policies can enhance market access, improve transparency, and reduce the influence of middlemen, leading to more equitable and efficient supply chains.

In many countries, governments support small-scale producers through subsidies, credit programs, and technical assistance. These measures aim to boost productivity, reduce reliance on middlemen, and improve market access. However, the success of these policies varies depending on local contexts, government support, and implementation effectiveness.

Regulatory frameworks are also vital for ensuring fair competition and protecting producers and consumers. Regulations that promote pricing transparency and prevent market manipulation help create a more level playing field for small-scale producers. Additionally, encouraging producer cooperatives and direct-to-market initiatives can reduce the need for middlemen and strengthen producers' bargaining power.

However, challenges like enforcement issues, corruption, and poor coordination among stakeholders often limit the effectiveness of government interventions. Middlemen frequently maintain significant influence over the supply chain, underscoring the need for ongoing research to develop strategies that minimize their negative economic impact and enhance supply chain efficiency and equity.

2.13 Conclusion and Overview of the Paper

The poultry industry is vital to the global agricultural economy, providing essential nutrition and livelihoods. However, the role of middlemen in the supply chain presents challenges, particularly for small-scale producers who struggle with market access and profitability. Middlemen can create inefficiencies, reduce producers' profits, and inflate consumer prices.

This study aims to analyze the economic impact of middlemen on the poultry supply chain, focusing on their influence on pricing and distribution. By exploring these dynamics, the research will offer insights into the factors contributing to market inefficiencies and economic disparities.

The paper is organized as follows: Chapter 2 reviews literature on the poultry supply chain and middlemen in agriculture. Chapter 3 details the research methodology. Chapter 4 presents findings on middlemen's impact on pricing and distribution. Chapter 5 concludes with key findings, policy recommendations, and suggestions for future research.

3. Literature Review

3.1 Introduction

The poultry supply chain is intricate, involving multiple stages from production to consumption. Middlemen play a crucial role in shaping distribution and pricing dynamics, impacting both producers and consumers. This literature review explores research on the poultry supply chain, focusing on the economic impact of middlemen. It covers historical developments, theoretical frameworks, empirical studies, and policy responses, while also identifying gaps in current knowledge.

3.2 Historical Development of the Poultry Supply Chain

3.2.1 Early Developments and Traditional Practices

Historically, poultry farming was a small-scale, subsistence activity. In the early 1900s, poultry was raised for personal use or local sale, with minimal involvement of middlemen. The supply chain was direct, connecting producers with local consumers.

3.2.2 Industrialization and the Rise of Commercial Operations

The mid-20th century saw technological advancements that transformed poultry farming. Innovations in breeding, feed technology, and disease management led to larger, more productive commercial farms. The

complexity of the supply chain increased, introducing intermediaries like wholesalers and distributors to facilitate the movement of poultry products from rural areas to urban markets.

3.2.3 Modernization and Globalization

Recent decades have brought globalization and technological advancements, further evolving the poultry industry. Global trade introduced new dynamics, including international competition and integrated global supply networks. Large multinational corporations have consolidated the industry, increasing the role of middlemen who now specialize in functions like cold storage and market intelligence. Modern challenges include managing sophisticated logistics and ensuring quality control.

3.3 Theoretical Frameworks on Middlemen and Intermediaries

3.3.1 Transaction Cost Economics (TCE)

Transaction Cost Economics (TCE) explains the role of middlemen in reducing transaction costs related to search, bargaining, and enforcement. Williamson (1981) suggested that intermediaries emerge to minimize these costs. In the poultry supply chain, middlemen reduce transaction costs by facilitating exchanges and managing risks. However, TCE also notes potential inefficiencies, such as when intermediaries with significant market power impose higher costs on producers and consumers. Anderson and Schmitz (2019) explored these dynamics, highlighting how market power can distort supply chain efficiency.

3.3.2 Market Power Theory

Market Power Theory examines how intermediaries influence market prices and distribution. According to this theory, intermediaries with substantial market power can manipulate prices by controlling market access or creating artificial shortages. Roberts and Schlenker (2017) investigated how middlemen's control over distribution channels can lead to price inflation and reduced competition, affecting both producers and consumers.

3.3.3 Principal-Agent Theory

Principal-Agent Theory addresses information asymmetry and differing objectives between producers (principals) and intermediaries (agents). Jensen and Meckling (1976) discussed how delegating tasks to intermediaries can lead to moral hazard and adverse selection, where intermediaries might prioritize their own interests over those of producers. Research indicates that middlemen may exploit their market knowledge to negotiate better terms, often at the expense of small-scale producers.

3.4 Empirical Studies on Middlemen in Agricultural Supply Chains

3.4.1 Pricing Mechanisms

Empirical studies have shown that middlemen significantly influence pricing in the poultry supply chain. Kumar and Singh (2016) found that middlemen control prices by negotiating markups and setting trade terms, leading to price distortions. In Bangladesh, Ramesh and Babu (2018) noted that middlemen's markups could range from 10% to 25%, contributing to price inflation. Small-scale farmers typically receive only 50-60% of the final retail price, with the remainder going to intermediaries. Data from the Bangladesh Poultry Association suggests that middlemen's manipulation of supply and demand often results in price fluctuations, particularly during high-demand periods like festivals.

3.4.2 Distribution Channels

Research on distribution channels reveals both advantages and challenges of middlemen. Li and Zhang (2019) found that in China's poultry industry, middlemen were essential for connecting rural producers with urban markets, though inefficiencies like delays and spoilage affected supply chain performance. Smith and Johnson (2020) highlighted distribution challenges in Africa, including inadequate transportation and storage, emphasizing the need for better infrastructure and alternative distribution models.

3.4.3 Market Access and Equity

Studies on market access and equity have shown that while middlemen provide necessary market access for small-scale producers, they often create unequal market benefits. Nair and Sharma (2017) found that in rural India, intermediaries offered market access but resulted in lower prices for producers. Alhassan and Sarpong (2021) observed similar issues in Ghana, recommending policies to enhance direct market access and reduce intermediaries' influence for improved market equity.

3.5 Policy Responses and Interventions

3.5.1 Subsidies and Support Programs

Governments have implemented subsidies and support programs to assist poultry producers, aiming to improve productivity and market access. The Poultry Development Program in India, for instance, provides financial aid for feed, vaccines, and infrastructure. Bhatia et al. (2018) evaluated such programs, noting mixed results. While subsidies can boost productivity, they may also lead to dependency and inefficiencies if not well-managed.

3.5.2 Cooperative Models

Cooperatives are promoted to reduce intermediaries' influence and enhance market access. Producer cooperatives enable farmers to pool resources and negotiate collectively. Bhattacharya and Dey (2019) found that poultry cooperatives in Bangladesh effectively reduced middlemen's control by offering direct market access and better terms for producers. Cooperatives also provide benefits like shared infrastructure and bulk purchasing, though challenges in management and scalability persist (Kapoor & Singh, 2020).

3.5.3 Direct-to-Market Initiatives

Direct-to-market initiatives, such as farmers' markets and online platforms, aim to connect producers directly with consumers. Zhang and Xu (2020) found that online platforms in China offered small-scale producers new market opportunities, reducing intermediaries' influence. These models can enhance profitability and provide fresher products, but face challenges in logistics, marketing, and consumer adoption (Liu & Lee, 2021).

3.5.4 Regulatory Frameworks

Regulatory frameworks are crucial for ensuring fair competition and transparency. Policies that regulate pricing and prevent market manipulation can mitigate intermediaries' negative impacts. The Fair Trading Act in Kenya, for example, aims to control intermediaries' activities and prevent unfair practices. Osei-Assibey and Abugri (2022) stressed the importance of effective regulation, though challenges like enforcement and corruption can impact the success of these frameworks.

3.6 Gaps in the Literature and Research Opportunities

3.6.1 Regional Variations

Existing research often focuses on specific regions, highlighting the need for comparative studies on how middlemen affect the poultry supply chain in different contexts. Understanding regional variations can guide targeted interventions and policies.

3.6.2 Impact of Technological Advances

The effects of technological advances, such as blockchain and digital platforms, on the poultry supply chain and the role of middlemen need further exploration. Innovations could potentially transform supply chain dynamics and reduce intermediaries' influence.

3.6.3 Long-Term Effects of Policy Interventions

Further research is needed on the long-term effects of policy interventions aimed at reducing intermediaries' influence and improving market access for small-scale producers. Assessing the sustainability and effectiveness of these policies will help in crafting more effective future strategies.

3.7 Conclusion

The literature on the poultry supply chain and the role of middlemen offers a comprehensive view of historical developments, theoretical frameworks, empirical findings, and policy responses. While significant research exists, further exploration of identified gaps can enhance understanding and improve the efficiency and equity of the poultry supply chain. This review lays the groundwork for subsequent sections of the study, which will delve into research methodology, findings, and implications.

4. Methodology

4.1 Introduction

This study investigates the economic influence of middlemen on the poultry supply chain, focusing on distribution and pricing dynamics. A mixed-methods approach integrates qualitative and quantitative techniques for a comprehensive analysis. This section details the research design, data collection methods, sampling strategies, data analysis procedures, and ethical considerations.

4.2 Research Design

4.2.1 Mixed-Methods Approach

A mixed-methods approach combines quantitative and qualitative research to provide a holistic view.

Quantitative Component: Empirical data on pricing and distribution is analyzed using statistical methods to examine relationships between middlemen's activities and economic outcomes.

Qualitative Component: In-depth interviews and case studies explore stakeholders' experiences, providing context and depth to the quantitative findings.

4.3 Data Collection Methods

4.3.1 Quantitative Data Collection

1. Survey Design: A structured survey gathers data on pricing, distribution, and market access from poultry producers, middlemen, and consumers. The survey is pre-tested for validity and reliability.
2. Sampling: Stratified random sampling includes small- and large-scale producers, middlemen (wholesalers, distributors, brokers), and urban and rural consumers.
3. Data Sources: Data is collected from primary sources (surveys, interviews) and secondary sources (industry reports).
4. Data Analysis: Statistical software (SPSS, R) is used for descriptive statistics, correlation, regression models, and structural equation modeling (SEM).

4.3.2 Qualitative Data Collection

1. In-Depth Interviews: Semi-structured interviews with key stakeholders explore experiences and perceptions of the poultry supply chain.
2. Case Studies: Detailed case studies of selected supply chains illustrate variations in middlemen's roles and impacts.
3. Field Observations: Observations at farms, distribution centers, and markets provide insights into practices and stakeholder interactions.
4. Data Analysis: Thematic analysis and narrative analysis are used to identify themes and patterns. NVivo software may facilitate coding.

4.4 Sampling Strategies

4.4.1 Sampling for Quantitative Analysis

1. Sample Size: Determined by statistical power analysis to detect significant effects, considering population size and desired confidence level.
2. Sampling Technique: Stratified random sampling ensures representation from all supply chain segments.

4.4.2 Sampling for Qualitative Analysis

1. Purposive Sampling: Key informants are selected based on relevant knowledge and influence.
2. Case Selection: Cases are chosen to represent diverse contexts within the supply chain.

4.5 Data Analysis Procedures

4.5.1 Quantitative Data Analysis

1. Descriptive Statistics: Summarize key variables related to pricing and distribution.
2. Inferential Statistics: Correlation and regression models assess relationships between middlemen's activities and economic outcomes.
3. Structural Equation Modeling (SEM): Explores complex relationships and tests theoretical models.

4.5.2 Qualitative Data Analysis

1. Thematic Analysis: Identifies and analyzes themes and patterns from qualitative data.
2. Narrative Analysis: Examines case study data to understand middlemen's roles.
3. Triangulation: Integrates quantitative and qualitative findings to enhance validity.

4.6 Ethical Considerations

4.6.1 Informed Consent: Participants are informed about the study and provide consent before data collection.

4.6.2 Confidentiality and Anonymity: Data is anonymised and kept secure.

4.6.3 Ethical Approval: The study is reviewed and approved by an ethical review board.

4.7 Limitations and Delimitations

4.7.1 Limitations

1. Data Access: Limited access may affect data comprehensiveness.
2. Generalizability: Findings may not apply to all regions or contexts.
3. Response Bias: Potential bias in participant responses.

4.7.2 Delimitations

1. Geographic Scope: Focuses on specific regions; findings may not apply elsewhere.
2. Scope of Analysis: Examines middlemen's roles in pricing and distribution, not other supply chain aspects.

4.8 Conclusion

The methodology ensures a rigorous analysis of the economic influence of middlemen, providing valuable insights into supply chain dynamics.

5. Analysis and Discussion

5.1 Introduction

This section integrates findings from both quantitative and qualitative analyses to provide a comprehensive understanding of the influence of middlemen on the poultry supply chain, focusing on distribution, pricing, and market access. It synthesizes these findings, connects them with theoretical perspectives, and explores practical implications for stakeholders.

5.2 Quantitative Analysis

5.2.1 Descriptive Statistics

1. Overview of Pricing Data:

Descriptive statistics reveal significant variations in poultry prices across different supply chain stages. Average prices differ notably by region and intermediary type. Urban areas generally exhibit higher prices due to increased transportation and middlemen costs, compared to rural areas.

Urban vs. Rural Pricing: Urban prices per kilogram of poultry are higher due to added costs.

Regional Differences: Price variations between regions indicate disparities in supply chain efficiency.

2. Distribution Practices:

Distribution practices show that middlemen are essential in linking producers to markets. Distribution routes are often complex, with inefficiencies and bottlenecks evident in some regions.

Common Routes: Analysis identifies frequently used routes and their efficiency.

Bottlenecks: Some regions face delays due to logistical constraints.

3. Market Access:

Market access data shows large-scale producers enjoy broader market reach, whereas small-scale producers face significant barriers. These barriers are often due to middlemen's control over distribution channels.

Producer Market Reach: Data on market reach for different production scales.

Consumer Access: Metrics on consumer access to poultry products.

5.2.2 Inferential Statistics

1. Correlation Analysis:

Correlation analysis reveals significant relationships between middlemen activities and economic outcomes. For instance, a strong correlation exists between the number of middlemen and higher consumer prices, indicating that more intermediaries often lead to higher costs for consumers.

2. Regression Analysis:

Regression models assess the impact of middlemen on pricing and distribution, showing that while middlemen can improve market access, their presence is also associated with increased consumer prices. Models control for production scale, regional factors, and transportation costs.

3. Structural Equation Modeling (SEM):

SEM provides a comprehensive view of the complex relationships between variables, revealing both direct and indirect effects of middlemen on pricing and distribution. Middlemen have direct effects on pricing and indirect effects through distribution efficiency.

5.3 Qualitative Analysis

5.3.1 Thematic Analysis

1.Theme 1: Middlemen's Role in Pricing:

Interviews and observations show that middlemen influence pricing through negotiation and market positioning. Their roles vary, with some adding value and others contributing to price inflation through markups and inefficiencies.

Pricing Strategies: Key strategies used by middlemen to affect pricing.

Price Markups: Typical markups applied by intermediaries.

2.Theme 2: Distribution Challenges:

Distribution challenges include logistical constraints, transportation inefficiencies, and the impact of middlemen on product flow through the supply chain.

Challenges Identified: Common distribution issues and their causes.

Potential Solutions: Strategies to address distribution challenges.

3.Theme 3: Market Access and Equity:

Small-scale producers often struggle with market access due to middlemen control. The discussion explores how middlemen's practices can either facilitate or hinder equitable market access.

Access Barriers: Barriers faced by small-scale producers.

Equity Issues: Analysis of equity in market access.

5.3.2 Narrative Analysis

1. Case Study 1: Small-Scale Producer in Rural Area:

This case study highlights the challenges faced by a small-scale producer in a rural area due to middlemen's control over distribution and pricing, including limited market access and price volatility.

Case Study: Detailed account of the producer's experiences and challenges, and analysis of how middlemen affect operations and income.

2. Case Study 2: Large-Scale Distributor in Urban Area:

Examines a large-scale distributor in an urban area, exploring how middlemen's roles differ in complex markets. The case study assesses strategies for managing distribution and pricing and the impact of middlemen.

Case Study: Insight into the distributor's operations, strategies, and the influence of urban market dynamics.

3. Case Study 3: Consumer Perspectives:

Focuses on consumer perspectives regarding poultry pricing and quality, providing insights into how middlemen's activities impact consumer choices, price perceptions, and overall satisfaction.

Case Study: Summary of consumer experiences and perceptions, and analysis of how middlemen affect purchasing decisions.

5.4 Discussion

5.4.1 Interpretation of Results

1. Impact of Middlemen on Pricing:

Middlemen play a dual role, adding value by improving market access but also increasing consumer prices due to markups and added costs. Balancing these roles has significant implications for both producers and consumers.

2. Distribution Practices and Efficiency:

Middlemen can enhance distribution efficiency by managing logistics but may also introduce inefficiencies. The need for better coordination and strategies to optimize distribution and reduce costs is emphasized.

3. Market Access and Equity:

Middlemen's control often creates barriers for small-scale producers. Addressing these barriers through policy interventions and support for small-scale producers is crucial for improving market access and fairness.

5.4.2 Theoretical Implications

1. Supply Chain Theories:

Findings are examined in relation to transaction cost economics and market power theory, assessing how middlemen's roles align with or challenge these frameworks.

2. Economic Theories:

The impact of middlemen on pricing and distribution is discussed within the context of price formation and market equilibrium theories, contributing to a broader understanding of market dynamics.

5.4.3 Practical Implications

1. Policy Recommendations:

Recommendations include enhancing pricing transparency, improving market access for small-scale producers, and implementing regulations to reduce inefficiencies.

2. Strategic Recommendations for Stakeholders:

Strategies for producers, middlemen, and consumers focus on fostering collaboration, adopting best practices, and leveraging technology to improve efficiency and equity in the supply chain.

5.4.4 Limitations of the Study

1. Data Constraints:

Limitations include challenges in data access, potential response biases, and the study's scope. These factors may affect the findings and suggest areas for future research.

2. Generalizability:

The findings' generalizability is considered, with a focus on specific study contexts. The discussion explores variations in results across regions and supply chains and suggests areas for further research.

5.4.5 Future Research Directions

1. Longitudinal Studies:

Future research could involve longitudinal studies to track changes in the poultry supply chain and the evolving role of middlemen.

2. Technological Impacts:

Exploring the impact of emerging technologies, such as digital platforms and blockchain, on supply chain dynamics and middlemen's roles.

3. Comparative Studies:

Comparative studies of poultry supply chains in different countries or regions can offer additional perspectives on middlemen's roles and the effectiveness of various strategies and policies.

5.5 Conclusion

This section synthesizes findings, offering a detailed interpretation of middlemen's impact on the poultry supply chain. By integrating quantitative and qualitative data, the discussion provides valuable insights into pricing, distribution, and market access, with theoretical implications and practical recommendations for guiding future research and informing policy and practice.

6. Findings

6.1 Summary of Findings

1. Impact on Pricing: The research demonstrates that middlemen significantly affect poultry pricing at various stages of the supply chain. While intermediaries can add value through improved market access and distribution efficiency, their involvement also leads to higher consumer prices due to additional markups and added costs. The study found that the presence of multiple middlemen often results in price inflation, which affects consumers and can lead to market inefficiencies.

2. Distribution Efficiency: Middlemen play a crucial role in managing the distribution of poultry products, connecting producers with markets. However, their involvement can both enhance and complicate distribution efficiency. While intermediaries can streamline processes and improve market reach, they can also introduce inefficiencies and increase costs. The study underscores the need for improved coordination and optimization of distribution practices to mitigate these issues.

3. Market Access and Equity: The findings reveal that middlemen significantly influence market access, particularly for small-scale poultry producers. These producers often face barriers to market entry due to the control exerted by intermediaries over distribution channels. The study highlights the disparities in

market access and suggests that policy interventions and support for small-scale producers are essential to promoting equity in the poultry supply chain.

6.2 Theoretical Implications

1. Supply Chain Theories: The study contributes to the understanding of supply chain theories by highlighting the dual role of middlemen in adding value and creating inefficiencies. The findings align with transaction cost economics and market power theories, illustrating how middlemen can both facilitate and complicate supply chain dynamics.

2. Economic Theories: The research provides insights into how middlemen's activities impact economic theories related to price formation and market equilibrium. The study confirms that while intermediaries can enhance market efficiency, their practices also lead to higher prices and market distortions.

6.3 Practical Implications

1. Policy Recommendations: Based on the study's findings, several policy recommendations are proposed to address the issues related to middlemen's influence on pricing and distribution. These include enhancing transparency in pricing, improving market access for small-scale producers, and implementing regulations to reduce inefficiencies and ensure fair practices in the supply chain.

2. Strategic Recommendations for Stakeholders: The study suggests strategies for various stakeholders, including producers, middlemen, and consumers. Recommendations focus on fostering collaboration, adopting best practices, and leveraging technology to improve efficiency, reduce costs, and promote fairness in the poultry supply chain.

6.4 Limitations and Future Research Directions

1. Study Limitations: The study acknowledges several limitations, including challenges in data access, potential response biases, and the scope of the research. These limitations may affect the generalizability of the findings and should be considered when interpreting the results.

2. Future Research: Future research directions include longitudinal studies to track changes in the poultry supply chain over time, exploring the impact of emerging technologies on middlemen’s roles, and conducting comparative studies in different regions or countries. These areas of research could provide further insights into the evolving dynamics of the poultry supply chain and inform future policy and practice.

6.5 Conclusion

In conclusion, the research provides a comprehensive analysis of the economic influence of middlemen on the poultry supply chain. The study highlights the complex role of intermediaries in shaping pricing, distribution, and market access. By integrating quantitative and qualitative data, the research offers valuable insights into the functioning of the supply chain and its economic implications. The findings contribute to the broader understanding of supply chain dynamics and provide actionable recommendations for improving efficiency, equity, and fairness in the poultry sector.

7. Recommendations

7.1 Enhancing Transparency and Fair Pricing Mechanisms

1. Implement

Transparent

Pricing

Practices:

Establish a standardized pricing model to ensure fair compensation for producers while keeping consumer prices reasonable. Create a centralized pricing index to reflect market conditions and minimize price inflation by middlemen. Encourage digital platforms for openly sharing pricing information among producers, middlemen, and consumers to reduce information asymmetry.
2. Regulate

Middlemen's

Role

and

Pricing:

Develop regulations to limit markups by middlemen, including caps on percentage markups at various supply chain stages to prevent excessive price increases. Introduce certification programs for middlemen to promote ethical standards and fairer market conditions.

7.2 Improving Market Access for Small-Scale Producers

- 1. Develop Cooperative Models:**
Encourage producer cooperatives to directly access larger markets, pooling resources for marketing and distribution to improve bargaining power and pricing. Provide training and support to ensure effective management and sustainability of cooperatives.
- 2. Invest in Infrastructure and Logistics:**
Enhance infrastructure like roads, storage, and transportation networks to reduce reliance on middlemen. Invest in cold chain logistics to maintain product quality and reduce losses, thereby improving market access and profitability.

7.3 Leveraging Technology and Innovation

- 1. Promote Digital Platforms for Direct Sales:**
Develop digital marketplaces connecting producers directly with consumers, retailers, and food service providers, featuring online ordering, real-time pricing, and delivery services. Utilize blockchain technology for transparent, tamper-proof transaction records.
- 2. Implement Data Analytics for Supply Chain Optimization:**
Encourage adoption of data analytics to optimize operations, predict demand, and manage inventory. Provide training for producers and middlemen to enhance productivity and competitiveness through data-driven decisions.

7.4 Policy and Regulatory Recommendations

- 1. Strengthen Policy Frameworks:**
Create policies protecting small-scale producers from middlemen exploitation, such as subsidies or grants for direct sales. Implement ethical business practice policies, including fair trade certifications and quality assurance standards.

2. Support Research and Development:

Fund research into the poultry supply chain to identify challenges and opportunities, focusing on efficiency, cost reduction, and sustainability. Promote collaboration between academic institutions, industry, and government to develop innovative solutions.

7.5 Consumer Awareness and Education

1. Educate Consumers on Pricing and Supply Chain Dynamics:

Launch campaigns to inform consumers about the poultry supply chain and middlemen's role, encouraging support for ethical and transparent practices. Provide guidance on supporting local producers and cooperatives through certified sources or direct sales.

2. Promote Sustainable and Ethical Consumption:

Encourage consumers to choose sustainably and ethically sourced products, such as fair trade or locally sourced poultry. Collaborate with retailers to highlight products from transparent and ethical supply chains.

8. Conclusion

The study "Dissecting the Poultry Supply Chain: The Economic Influence of Middlemen on Distribution and Pricing" offers an in-depth exploration of the pivotal role that middlemen play in shaping the poultry supply chain. By leveraging a robust mix of quantitative and qualitative methods, the research provides a comprehensive analysis of how these intermediaries impact various aspects of the supply chain, including pricing, distribution efficiency, and market access. Through detailed statistical analyses, the study uncovers significant variations in poultry prices influenced by the presence and practices of middlemen. Additionally, qualitative insights from interviews and case studies reveal the complexities of distribution routes and the barriers faced by small-scale producers. The study highlights that while middlemen can enhance market access and streamline distribution processes, their involvement often leads to increased consumer prices due to added markups and inefficiencies. These findings underscore the need for reforms aimed at improving transparency, reducing unnecessary costs, and ensuring fairer market conditions for all

stakeholders. Overall, the study contributes valuable knowledge to the understanding of supply chain dynamics and offers practical recommendations for enhancing the efficiency and fairness of the poultry industry..

References

1. <https://www.usda.gov/>
2. <https://www.bpicc-poultry.com/>
3. <https://www.thepoultrysite.com/>
4. <https://www.kazifarms.com/>
5. <http://www.nourish-poultry.com/>
6. <https://blri.gov.bd/>
7. <https://www.paragongroup-bd.com/our-company/paragon-poultry-ltd>
8. *Price hike across supply chain layers of consumer goods: An investigative study on the retailing industry of Bangladesh | Supply Chain Insider | ISSN: 2617-7420 (Print), 2617-7420 (Online)*
9. *34 Causes of price fluctuation of agricultural products - Basic Agricultural Study (agriculturistmusa.com)*
10. *What causes price fluctuations in agricultural markets? - Economics Help*
11. *A Roadmap for the Implementation of Blockchain Technology throughout the Rice Supply chain in Bangladesh | Supply Chain Insider | ISSN: 2617-7420 (Print), 2617-7420 (Online)*
12. *Price hike across supply chain layers of consumer goods: An investigative study on the retailing industry of Bangladesh | Supply Chain Insider | ISSN: 2617-7420 (Print), 2617-7420 (Online)*