

A STUDY ON
Supply Chain Management of Fertilizers
Industries in Bangladesh: An Observational
Study of F. Rahman & Brothers

Internship report
on
Supply Chain Management of Fertilizers Industries in
Bangladesh: An Observational Study of F. Rahman & Brothers



SUBMITTED BY

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DATE OF SUBMISSION

25th February, 2025

UNITED INTERNATIONAL UNIVERSITY

Letter of Transmittal

To

Dr. Saad Hasan

Associate Professor- School of Business and Economics

United International University

Subject: Submission of internship report on “Supply Chain Management of Fertilizers Industries in Bangladesh: An Observational Study of F. Rahman & Brothers.”

Dear sir,

I have effectively compiled my internship report on F. Rahman & Brothers, a significant company marketing platform. The title of my report is “Supply Chain Management of Fertilizer Industries in Bangladesh: An Observational Study of F. Rahman & Brothers.” This report enables me to evaluate the skills and techniques I have acquired throughout my three-month internship. Owing to my insufficient relevant job experience, I recognize that my report may include mistakes and require perfection. Although certain concepts I considered throughout my study for this report may seem superfluous today, they become essential when implemented. I really anticipate using the knowledge from this internship program.

During my time with F. Rahman & Brothers, I took advantage of the chance to collaborate with the supply chain team at their headquarters. I am grateful for your support and encouragement, which inspired me to work hard diligently. Regarding the report, I would be more than pleased to answer any questions you may have.

Your obedient student,

Afridi Siddique

ID: 111 193 056

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Date of submission: 25th February, 2025

Declaration of Student

I, Afridi Siddique, confirm that the internship report titled “Supply Chain Management of Fertilizers Industries in Bangladesh: An Observational Study of F. Rahman & Brothers” is available. This report is unique and has not been archived or published anywhere. This report was prepared as part of my academic program in partial fulfilment of my B.B.A degree.

Signature: _____

Afridi Siddique

Student ID: 111 193 056

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Certificate of Supervisor

This is to certify the submission of the internship report titled “Supply Chain Management of Fertilizers Industries in Bangladesh: An Observational Study of F. Rahman & Brothers” for the fulfillment of the Bachelor of Business Administration (BBA) degree at United International University. The report was prepared by Afridi Siddique, a student in School of Business and Economics under my supervision. His Student ID number is 111 193 056. He has executed his responsibilities under my oversight and guidance. To the best of my understanding and in line with his statement, no segment of this study has been presented for any other degree, or certificate.

Best regards

Dr. Saad Hasan

Associate Professor in Supply Chain Management

School of Business and Economics

United International University

Acknowledgement

I would like to thank the Almighty Allah and my parents for giving me the fortitude, endurance, and courage necessary to complete the B.B.A degree at United International University.

I greatly appreciate the data that was made available for this report. My internship supervisor, Dr. Saad Hasan, Associate Professor - School of Business and Economics, United International University, deserves special recognition for his guidance and dedication in assisting me in preparing an internship report.

Afterward, I would like to thank Mr. Khalekkuzzaman Tutul, the Managing Director, for his assistance. I am overwhelmed by my gratitude for all F. Rahman & Brothers staff. They provided a comprehensive explanation of all the information I requested and responded efficiently. I am grateful to the Human Resources Department of F. Rahman & Brothers for allowing me to intern at the firm. I thank my peers and classmates for their assistance when I could not comprehend a particular theory. We accomplish our duties whilst we collaborate and assist one another.

Finally, I thank the United International University administration for organizing this pupil initiative application. It empowers students to convert their theoretical know-how into sensible enjoyment, preparing them to make a meaningful effect inside the business area.

Executive Summary

F. Rahman & Brothers is a significant fertilizer distributor in Kawkhali Upazila, Pirojpur, Bangladesh. This internship report looks at their supply chain management procedures in the context of the country's agricultural economy and the government-regulated fertilizer market. Agriculture is an important sector of Bangladesh's economy, and a large proportion of Bangladeshis are employed in it. Fertilizers play an essential role in enhancing crop yields, especially in the rice-growing area of the country, where the most arable land is utilized.

An essential part of F. Rahman & Brothers's business model is the distribution of fertilizers, both local (urea) and foreign (TSP, MOP, DAP), to farmers via a system of 32 sub-dealers spread among five unions. With government-fixed pricing for urea purchased from the Bangladesh Chemical Industries Corporation (BCIC) and non-urea fertilizers imported from outside vendors, the firm functions within a dual distribution system. F. Rahman & Brothers has a solid foundation and the confidence of the farmers in Kawkhali Upazila, which allows them to maintain monopoly status as the only distributor authorized by BCIC in the area. The subsidized fertilizer market is reflected in the company's financial structure. Its dedication to social effect and CSR is shown by its interest-free loans to smallholder farmers and its willingness to bear some of the increase in transportation costs during crises. Expanding its scope to include Bangladesh's agricultural industry as a whole, the paper discusses topics such as soil fertility, climate change, and the role of fertilizers in raising crop yields.

Strategic priorities such as logistics modernization, capacity expansion, and digital integration are necessary to overcome the challenges that F. Rahman & Brothers faces. The report finally mentioned that F. Rahman & Brothers is a vital component of Bangladesh's fertilizer distribution and supports food security and agricultural production in Bangladesh. Policy changes that the firm is pressing for include subsidized freight rates, a buffer stock allowance, and stricter antitrust measures. The findings of this study indicate that enhancing the efficiency and sustainability of fertilizer distribution in Bangladesh would be possible through logistics, inventory management, and regulatory compliance improvements.

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Lists of Abbreviation

UIU	United International University
BBA	Bachelor of Business Administration
B2B	Business to Business
B2C	Business to Consumer
BCIC	Bangladesh Chemical Industries Corporation
BFA	Bangladesh Fertilizer Association
HYVs	High-Yielding Varieties
BADC	Bangladesh Agricultural Development Corporation
KAFCO	Karnaphuli Fertilizer Company Limited

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**Bangladesh Chemical Industries
Corporation (BCIC)**

CHAPTER I: INTRODUCTION

1.1 Overview

The BBA internship program provides an essential practical dimension to the education students in the BBA receive and is an opportunity to learn about the real-life issues that manifest themselves in different corporate contexts. A cornerstone of the BBA curriculum, the internship lasts three months and provides students with crucial hands-on experience. During this time, I was privileged to work closely with F. Rahman & Brothers's committed team to address the topic.

The BBA students must write an internship report at United International University Bangladesh to gain real-world insights. The internship program requires the students to write a complete project report and trains them on numerous organizational tasks, ranging from manufacturing to finance. BBA students at United International University, Bangladesh, must complete an internship program lasting 8- 12 weeks and submit an internship report. This program's fundamental purpose is to equip students with opportunities for practical knowledge and actual company operations so that they can grow and develop professionally.

I, Afridi Siddique, got the opportunity to intern at F. Rahman & Brothers after finishing my four-year BBA study at United International University. In my internship at F. Rahman & Brothers, I was acquainted with how complex supply chain is in the context of districts, specifically concerning F. Rahman & Brothers operations. This internship report summarizes the results and insights learned during the internship, which light on the supply chain process employed by F. Rahman & Brothers and its consequences in a busy market environment.

1.2 Justification of the Study

This internship report has been prepared as a mandatory requirement for completing the Bachelor of Business Administration (BBA) degree under the supervision of Dr. Saad Hasan, Associate Professor at the School of Business and Economics, United International University. The internship carries three (3) credit hours and spans a duration of four months.

The main objective of the internship is to maintain some relevant, practical business knowledge and industry experience before starting a career. I worked for three months for F. Rahman & Brothers, which is one of the respectable fertilizer distributors in Kawkhali Upazila, Pirojpur. During this period, I interacted with various aspects of the agricultural input distribution business.

In particular, I focused on the marketing and distribution processes of essential fertilizers. The knowledge at F. Rahman & Brothers has been necessary to understand:

- ✓ The intricate management of agricultural input supply chains
- ✓ Governmental regulations and compliance within the fertilizer sector
- ✓ Management of distribution networks across five unions and thirty-two sub-dealers
- ✓ Marketing strategies in a government-moderated commercial environment
- ✓ Agricultural operational challenges

One of the key insights I gained from this internship is practical knowledge of the commercial aspects of the fertilizer industry, which is crucial for Bangladesh's agricultural-based economy. This was incredibly instrumental in enhancing my understanding of the implementation of theoretical business concepts in actual development, particularly in an industry with a high government involvement that often plays a leading role in national food security and agricultural productivity. The knowledge acquired during this internship will provide a robust basis for my future career in business management, particularly in agriculture supply chain and distribution industries. This paper seeks to chronicle these educational experiences while examining the commercial activities of F. Rahman & Brothers from an academic standpoint.

1.3 Objective of the Study

F. Rahman & Brothers is a significant fertilizer distributor in Kawkhali Upazila. The purpose of this study is to assess the effectiveness of their supply chain management system and examine their whole marketing and distribution activities. The main goal of the study is to understand fertilizer distribution in Bangladesh's agriculture industry from an operational and strategic standpoint.

General Objective

The primary purpose of this study is to investigate F. Rahman & Brothers' distribution patterns and business tactics in Bangladesh's controlled fertilizer market, with an emphasis on how they contribute to agricultural production by distributing fertilizer effectively.

Specific Objectives

- ✚ Assessing the efficacy of fertilizer allocation across five unions
- ✚ Examining the collaboration with thirty-two sub-dealers
- ✚ Evaluating storage and inventory management methodologies
- ✚ Analyzing procurement procedures from governmental sources
- ✚ Analyzing transportation and logistics systems
- ✚ Evaluating inventory control and distribution scheduling
- ✚ Evaluating profit margins and cost frameworks

1.4 Methodology of the Study

It means the process followed to observe, survey, or analyze something or the method. Important essential facts and the following are the possible sources to collect the topic. In order to meet the data demand and obtain the above essential information, the following sources have been used:

Data collection

- **Primary Data:**
 - ✓ By discussing it with the workers and the management of the firm.
 - ✓ From a real working environment.
 - ✓ Data was obtained via observation of the company's behavior.
 - ✓ Talk with the consumer.
- **Secondary Data:**
 - ✓ Organizational profile of F. Rahman & Brothers
 - ✓ Office files and documents.
 - ✓ Internet.
 - ✓ Some of my course components are relevant to this work.

1.5 Scope of the Study

This report investigates the operations and distribution systems of F. Rahman & Brothers, a prominent fertilizer distributor in Kawkhali Upazila, Pirojpur. The study provides a thorough examination of the fertilizer distribution network of the company, which is responsible for the services of 32 sub-dealers in five unions. During my three months of training, I gained practical knowledge regarding the functioning of the business and the individual aspects of compliance with regulations, inventory control, and distribution management. I was able to observe and analyze a variety of aspects of the fertilizer distribution business with the assistance of the Manager, who provided valuable access to operational data and industry insights. Examining the company's inventory management practices, coordination with sub-dealers, relationships with government agencies (BCIC and BFA), and role in Bangladesh's agricultural input supply chain are all included in the scope of this study. I was able to gain a comprehensive understanding of the practical challenges and opportunities in the fertilizer distribution sector by making regular visits to the company's 80×50 feet godown facility in Kawkhali South Bazar. Additionally, I was able to observe the application of theoretical business concepts in real-world scenarios within a government-regulated industry.

1.6 Limitations of the Study

Just a few things were unfettered at the moment of inquiry or action. When putting up this report, I encountered a few obstacles. However, I had the incredible chance to learn the ropes of F. Rahman & Brothers in Kawkhali Upazila, Pirojpur, while interning there. The following are some restrictions:

- One of the most crucial constraints is time scarcity. I have three months to complete this examination and want more time to finish the challenge.
- A deeper understanding of the fertilizing enterprise and tradition is needed.
- The individual related to the policy became uncomfortable talking about the policy.
- A few touchy critical information and facts inside the file should be found in numerous records resources, limiting the report. Because of that, I cannot display particular inner statistics.
- The firm's confidentiality problems prevented it from accumulating some pivotal information.

CHAPTER II: ORGANIZATION BACKGROUND

2.1 Introduction to F. Rahman & Brothers

F. Rahman & Brothers is the primary BCIC fertilizer distributor for Kawkhali Upazila in Pirojpur, Barishal, and is a critical component of Bangladesh's agricultural supply chain. Initially intended as a rental property, the company was established in 1990 by Chairman Abu Bakar Siddique with an 80×50 feet godown facility located in Kawkhali Dokkhin Bazar. Nevertheless, the business rapidly diversified when Siddique obtained BCIC and BFA memberships, thereby becoming the authorized fertilizer distributor for the entire Pirojpur district.

The organization operates within Bangladesh's dual fertilizer distribution system, which distinguishes between urea and non-urea fertilizer distribution channels. The company purchases urea directly from the Bangladesh Chemical Industries Corporation (BCIC) at government-fixed prices as a union-level dealer. As a state-owned organization, BCIC oversees fertilizer production and administers six urea fertilizer factories, one TSP, and one DAP facility throughout the nation. BCIC's fertilizer production is distributed from the factory gates to appointed merchants at government-determined prices. F. Rahman & Brothers restructured its operations to concentrate solely on Kawkhali Upazila in response to the government's 2000 policy transition from district-level to upazila-level licensing. The organization, which is currently founded in Kawkhali South Bazar, coordinates with 32 sub-dealers to ensure the efficient shipping of fertilizer to farmers and keeps a complete distribution network throughout five unions. Typically, every union has 9 sub-dealers, one in every of whom is positioned in every ward. These sub-sellers purchase from the primary distributor and sell immediately to farmers. The government rigorously regulates retail prices no matter the fact that there is no constant quota for farmer purchases. The organization's operational structure contains 10 employees, with a designated supervisor responsible for supervising coins series and sales operations. This administratively supervised network of registered merchants and sub-dealers manages the allocation of fertilizer across various geographical regions.

Nevertheless, the fertilizer market is confronted with integration challenges that are both geographically and temporally based, resulting in substantial pricing disparities between the wholesale and retail markets. Businesses engaged in the production, import, sales, marketing, administration, and storage of fertilizer are required to adhere to specific laws and regulatory

requirements in accordance with Bangladeshi regulations. The Fertilization Management Act (2006) and the Control of Essential Commodities Act 1956 regulate the company's operations.

A distinctive feature of F. Rahman & Brothers' business model is the management of both domestically produced and imported fertilizers. Bangladesh necessitates approximately 4 million tons of chemical fertilizers annually, with the primary categories being Urea, Muriate of Potash (MP), and Triple Super Phosphate. The company collaborates with government agencies to procure imported non-urea fertilizers (TSP, MOP, DAP) from international suppliers in Russia, Morocco, and China through designated government warehouses in Barishal, Jashore Noapara, and Bhola, despite the fact that urea is produced domestically. In transportation logistics, the organization has multiple operational challenges. Farmers face storage and credit constraints and cannot benefit from lower prices off-season. They have to buy in order to replant during peak season and suffer from their peak prices. Also, corruption arises within the haulage industry, and the transport syndicates affect the ease of doing business, thus driving up transport costs astronomically. In order to ensure that the distribution of the seeds is transparent, the company abides by the government's farmer registration system, which was introduced in the Boro 2009 season. Sub-Assistant Agricultural Officers (SAAOs) execute household surveys as part of this system, which entails the maintenance of a 'Farmers' Register' that contains comprehensive information on seasonal commodities and household cultivation areas. A 'Fertilizer Distribution Card' is issued to each agricultural household, which contains information regarding their cultivation. The distribution process is conducted in accordance with SAAO recommendations.

Going forward, adaptation to changing agriculture policies will be a challenge for all; F. Rahman & Brothers will be in a position to remain the key link in Bangladesh's fertilizer distribution network. At heart, the success of the company comes from their ability to sustain optimal logistical facets across its operational grounds while carefully managing regulations, market demands, and agricultural needs.

2.2 Service & Product

F. Rahman & Brothers functions as a considerable authorities-legal distributor of fertilizers in Kawkhali Upazila, overseeing the distribution of both domestically produced and imported

fertilizers. The following are comprehensive specifications for his or her product portfolio in accordance with Bangladesh's agricultural rules and marketplace dynamics:

Urea

F. Rahman & Brothers are engaged in the distribution of urea ($\text{CH}_4\text{N}_2\text{O}$) fertilizer, which serves as the principal nitrogen source for rice cultivation in Bangladesh, accounting for 80% of the nation's nutrient utilization. Urea is sourced domestically from BCIC plants such as CUFL (Chittagong) and Jamuna Fertilizer Factory, in addition to imports from Saudi Arabia, UAE, and Qatar. It is sold at government-regulated prices of ₳25/kg for dealers and ₳27/kg for farmers. The organization implements the Urea Deep Placement (UDP) method, resulting in a yield increase of 20–25% and a reduction in urea usage by 78–150 kg/ha. Monthly allocations from government warehouses, such as Barishal Bafar and Jashore Noapara, provide supply stability; however, domestic production remains challenged by gas shortages.



Triple Super Phosphate (TSP)

TSP (Na_3PO_4) delivers a concentrated source of phosphorus essential for root development and flowering. Bangladesh's TSP Complex Limited has an annual production of 1.52 lakh MT, while F. Rahman & Brothers focuses on importing Moroccan TSP at a rate of ₳25/kg for dealers and ₳27/kg for farmers. Applied at 13 kg/bigha for Boro rice, TSP encounters supply-chain challenges due to dependence on tenders (e.g., \$567.80–600/ton CFR in 2024). The fertilizer is stored in BCIC

warehouses prior to distribution to sub-dealers, which are facing challenges such as stock shortages during peak seasons.



Muriate of Potash (MOP)

MOP, which contains 60% K_2O , improves disease resistance and enhances fruit quality. Imported from Russia (40%), Canada (20%), and Belarus, the pricing is set at ₹18/kg for dealers and ₹20/kg for farmers. F. Rahman & Brothers has an annual demand of 1.5 lakh MT and applies MOP at a rate of 22 kg per bigha for Boro rice. However, transportation syndicates increase costs by 20–25%. The government provides a subsidy of ₹40 per kilogram to mitigate dependence on imports and address logistical corruption.



Diammonium Phosphate (DAP)

DAP $(NH_4)_2HPO_4$, which provides 18% nitrogen and 46% phosphate, plays a vital role in ensuring balanced crop nutrition. BCIC's Chattogram plant has an annual production capacity of 1 lakh MT,

whereas F. Rahman & Brothers imports 6 lakh MT per year through a Saudi deal with Ma'aden for the 2025–26 period at a rate of \$550 per ton, with sales prices set at ₳19/kg for dealers and ₳21/kg for farmers. When applied at a rate of 12 kg per bigha, DAP is subject to volatility resulting from global price fluctuations, projected to range between \$685 and \$717 per ton CFR in 2024. Storage at the Bhola BCIC godown occurs prior to distribution; however, transportation corruption continues to pose a challenge.



F. Rahman & Brothers is a company that works under BCIC and BFA licenses and obtains monthly allotments from government godowns. Transportation inefficiencies and syndicate-driven expenses continue to have an impact on profits, even with subsidies (for example, ₳49/kg for DAP). The firm has 32 sub-dealers in Kawkhali's five unions who guarantee last-mile delivery. However, changes in logistics and buffer inventories are necessary to reduce shortages that occur during certain seasons.

Fertilizer	Dealer Price (₳/kg)	Farmer Price (₳/kg)	Govt. Subsidy (₳/kg)
Urea	25	27	21
TSP	25	27	23
MOP	18	20	40
DAP	19	21	49

Table 01: Pricing structure of different Fertilizers

2.3 Mission, Vision & Values

Mission Statement: F. Rahman & Brothers' first priority is to abide by time and quality to deliver quality fertilizers on time and tangibly contribute to food security and agricultural production of Bangladesh. The corporation is committed to empowering farmers through the provision of essential agricultural inputs at low prices, incentives for sustainable agricultural practices, and support in developing the country's agricultural industry. F. Rahman & Brothers wants to be a trusted partner for farmers and other stakeholders in the fertilizer industry with a focus on accessibility, reliability, and customer satisfaction.

Vision Statement: F. Rahman & Brothers aims to be Bangladesh's best fertilizer distributor by providing excellent customer service, using sound business practices, and helping the agricultural sector. By expanding its reach across Kawkhali Upazila and beyond, the firm seeks to ensure all farmers have access to the fertilizers they require. To remain a reliable partner in elevating agricultural output and rural development, F. Rahman & Brothers has to be innovative, collaborate with governmental organizations, and adopt a more sustainable ethos.

Core Values of F. Rahman & Brothers: F. Rahman & Brothers operates on fundamental principles that guide our business practices and relationships with stakeholders.

- Commitment to farmer welfare through reliable fertilizer distribution
- Strict adherence to government regulations and pricing policies
- Maintenance of transparent relationships with sub-dealers and stakeholders
- Professional integrity in all business transactions
- Efficient inventory management and timely distribution
- Strong commitment to supporting local agricultural communities
- Continuous development in operational performance and service shipping
- Environmental responsibility in storage and handling practices
- Dedication to employee development and safety
- Collaborative approach with government agencies and agricultural bodies

These values form the foundation of our operations and guide our decision-making processes in serving Bangladesh's agricultural sector.

2.4 Corporate Structure

The organizational structure of F. Rahman & Brothers is as follows:

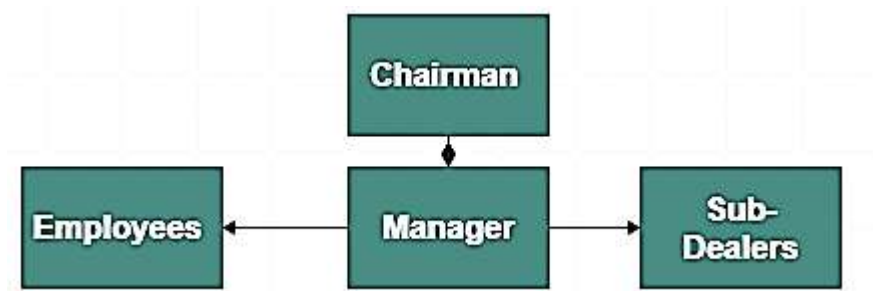


Figure 01: The Organogram of F. Rahman & Brothers

2.5 Type of Business

F. Rahman & Brothers is a recognised wholesale fertiliser distributor for Kawkhali Upazila in Pirojpur, Barishal, under the auspices of the Bangladesh Fertiliser Association (BFA) and the Bangladesh Chemical Industries Corporation (BCIC). From a small storage facility when it was founded in 1990, the firm has expanded to become an essential part of Bangladesh's agricultural supply chain, juggling particular market issues with national policy recommendations. The kind of company it is, how it functions, and its place in the market are all explained in detail below.

Core Business Model

The organization serves as a licensed intermediary in Bangladesh's government-regulated fertilizer distribution system. It is engaged in the following primary activities:

- **Procurement:** The acquisition of urea (domestically produced) and non-urea fertilizers (TSP, MOP, DAP) from government-designated godowns.
- **Storage:** Managing bulk inventory in an 80×50-foot godown.
- **Distribution:** 32 sub-dealers are provided in five unions within Kawkhali Upazila.
- **Cash Collection:** Overseeing transactions with sub-dealers through a ten-member team, which includes a designated manager.

This model is consistent with the Essential Commodities Act (1956) and Fertilizer Management Act (2006) of Bangladesh, which require stringent regulation of fertilizer pricing, quality, and distribution.

Regulatory Compliance & Licensing

License Type	Issuing Authority	Purpose	Renewal
BCIC Dealership	Ministry of Industries	Authorizes procurement from BCIC godowns	Annual
BFA Membership	Ministry of Agriculture	Permits market operations	Biannual
Trade License	Pirojpur District Council	Legalizes local business activities	Annual

Table 02: F. Rahman & Brothers operates under a multi-tier licensing system

In an effort to reduce black-market activity and increase farmer access, Bangladesh decentralized fertilizer management, as seen by the company's shift from a district-level dealer (prior to 2000) to an Upazila-level distributor.

Supply Chain Architecture

The business follows a three-tier distribution framework:

1. Government Import & Storage

Non-urea fertilizers: Imported from Russia (MOP), Morocco (TSP), and China (DAP) by the Ministry of Agriculture. The storage hubs are given below

- Barishal Bafar Godown
- Jashore Noapara Godown
- Bhola BCIC Godown

2. Upazila-Level Procurement

- Monthly allotments specify metric tons per fertilizer type.
- Fixed pricing: Urea (₳16–27/kg), TSP (₳25–27/kg), MOP (₳18–20/kg), DAP (₳19–21/kg).

3. Last-Mile Distribution

- 32 sub-dealers (6–7 per union) purchase from F. Rahman & Brothers' godown.
- Cash-only transactions ensure liquidity for restocking.

Key Operational Challenges

- 1. Transportation Syndicates:** Trucking cartels inflate costs by 20–25%, eroding profit margins. Example: A 10-ton shipment from Barishal Bafar Godown (50 km) costs **₹8,000–10,000** instead of **₹6,500**.
- 2. Inventory Risks:** No buffer stock for non-urea fertilizers leads to shortages during peak seasons (e.g., Boro rice cultivation).
- 3. Regulatory Constraints:** Mandatory adherence to government pricing limits markup flexibility (2–5% profit margin).

Market Position & Competitive Advantages

- **Monopoly Status:** Sole BCIC-authorized distributor in Kawkhali Upazila.
- **Infrastructure:** 4,000 square ft. godown with 30+ years of operational history.
- **Farmer Trust:** Direct linkages to 15,000+ farming households through sub-dealers.

Financial Structure

Component	Details
Revenue Streams	Sales to sub-dealers (₹4.2–5.6 crore annually)
Cost Drivers	Transport (35%), labor (15%), godown maintenance (10%)
Profitability	3–4% net margin due to subsidized pricing and high logistics costs

Table 03: Financial structure of F. Rahman & Brothers

Social Impact & CSR Initiatives

Despite slim margins, the company:

- Absorbs 5–7% of transport cost hikes during floods/cyclones.
- Provides interest-free advances to 200+ smallholder farmers annually.
- Employs locally, with 70% staff from Kawkhali Upazila.

Future Strategic Priorities

- **Logistics Modernization:** GPS-tracked vehicles to bypass syndicates (₳12 lakh initial investment).
- **Capacity Expansion:** 40% godown expansion by 2026 (₳20 lakh budget).
- **Digital Integration:** Mobile banking for 50% transactions by 2027.

Policy Advocacy

The company lobbies for:

- Subsidized freight rates for BCIC distributors.
- Buffer stock provisions for non-urea fertilizers.
- Stricter anti-syndicate measures under the Competition Act (2012).

F. Rahman & Brothers is a managed farming commercial enterprise in Bangladesh with the objective of aiding public gain and being financially sustainable. Even with problems like dishonesty in shipping and gaps in inventory, the Upazila-targeted technique is still essential for ensuring food safety in the US. Investing in transportation and supporting policy modifications could make it greener and more critical to Bangladesh's farming economic system.

CHAPTER III: AGRICULTURE IN BANGLADESH

3.1 Agricultural Sector in Bangladesh

Agriculture is the foundation of Bangladesh's economy, accounting for over 11.5% of the national GDP and engaging almost 41% of the workforce. Although its contribution to GDP has diminished over the years as a result of industrialization and urbanization, agriculture continues to be essential for food security, rural livelihoods, and economic stability. The industry is primarily characterized by agricultural production, with rice serving as the main crop farmed on more than 70% of arable land. Additional notable crops are wheat, jute, sugarcane, potatoes, and oilseeds.

The advent of High-Yielding Varieties (HYVs) during the Green Revolution revolutionized Bangladesh's agricultural sector. High-yielding varieties need the intense use of inputs like fertilizers, irrigation, and pesticides to attain increased output. Fertilizers significantly enhance yields, accounting for roughly 50% of agricultural production increase. Scientific investigations demonstrate that the use of fertilizers may increase rice yields from 2.4 tons per hectare to 5.2 tons per hectare. Nonetheless, obstacles remain in the agriculture industry. Soil fertility has deteriorated owing to excessive and uneven use of artificial fertilizers such as urea, while critical elements like phosphorus (TSP) and potassium (MOP) have been overlooked. Moreover, climate change presents hazards via unpredictable precipitation patterns, flooding, and droughts, hence exacerbating agricultural activities.

Fertilizer prices are very much related to the agricultural input market, and there are other risk factors that are linked to them. While some legislative changes have been made to address these problems, broader solutions are necessary to deal with looming crises in food security. We are still focused on increasing access to technology for poor farmers and providing policy solutions that enable small farmers to use modern agricultural inputs. With industrialization and agricultural modernization in Bangladesh, environmental factors are becoming more and more critical. The nation faces huge environmental problems due to various industries. Thus, the fertilizer industry needs to adapt to implement sustainable practices that help it avoid negative environmental consequences while providing agricultural yield. Breaking: Recent developments in the renewable energy space may affect the fertilizer industry as energy costs drive fertilizer production. Bangladesh has made substantial progress in tapping its renewable energy potential, generating a total of 723.26 MW from various sources to date. Such progress could be beneficial

for the fertilizer industry by offering more sustainable and cost-effective energy sources for production plants.

Government strategies have concentrated on guaranteeing inexpensive fertilizer availability via subsidies and sustaining steady farm gate pricing. Government policies have focused on ensuring the availability of cheap fertilizers through subsidies and maintaining farm gate prices in a range. Urea is available at a highly subsidized rate of $\text{₳}16$ per kg for the farmers against a manufacturing cost of more than $\text{₳}96$ per kg. These techniques aim to sustain agricultural production and provide food security to a growing population.

3.2 Sector Stakeholders

Bangladesh has a multi-stakeholder fertilizer sector comprising public, private, and international players. They all play a role in ensuring fertilizers reach and are distributed across the country — each serving a different purpose.

Government Entities

- **Bangladesh Chemical Industries Corporation (BCIC):** A state-owned organization tasked with the organization of urea and restricted amounts of TSP and DAP via its six urea facilities and one TSP facility. BCIC supervises fertilizer imports and domestic demand deficiencies for fertilizer.
- **Bangladesh Agricultural Development Corporation (BADC):** Primarily oversees the importation and distribution of non-urea fertilizers such as fertilizers and DAP under governmental contracts.
- **Ministry of Agriculture:** It formulates fertilizer regulations and import limits and controls prices to maintain affordability for farmers.

Private Sector

- **Bangladesh Fertilizer Association (BFA):** It represents more than 7,000 private dealers engaged in the importation of non-urea fertilizers and fertilizers via a comprehensive network of wholesalers and retailers.

- **KAFCO (Karnaphuli Fertilizer Company Limited):** A collaborative enterprise between the government and international investors that manufactures urea for internal use and exportation.

International Organizations

Historically, organizations such as the World Bank and USAID have provided funds and technical help to Bangladesh's fertilizer industry. For example, in order to increase efficiency, USAID promoted commercial fertilizer privatization in the 1980s.

Farmers

Smallholder farmers used fertilizers. To procure fertilizers at controlling prices, they have to approach local merchants or bar dealers. But some of these are somewhat logistical and less sporadic in availability, especially during the bumper growing seasons when their availability meanwhile hampers their success so often.

Transporters

Logistics providers are essential in the transportation of fertilizers from fertilizers to regional warehouses and, subsequently, to dealers. Transportation syndicates often augment expenses by 20–25%, resulting in inefficiencies within the supply chain.

3.3 Agro-Supply Chain

From purchase to distribution, Bangladesh's fertilizer supply chain is a multi-stage, intricate system:

Procurement

Fertilizers may be imported or purchased domestically:

- **Domestic Production:** Because of deteriorating infrastructure, BCIC's six urea facilities, which have an annual capacity of around 2 million tons, often fall short.
- **Imports:** Morocco, Russia, Canada, China, and Jordan are among the nations that import non-urea fertilizers such as TSP (Triple Super Phosphate), MOP (Muriate of Potash), and DAP (Diammonium Phosphate).

Storage

Imported fertilizers are held in government-operated buffer warehouses situated at key locations, including Barishal Bafar Godown and Jashore Noapara Godown. These infrastructures provide regional accessibility during peak periods such as Boro or Aman rice growing.

Distribution

There are three levels to the distribution system

- ✓ Fertilizers are supplied to authorized merchants by BCIC or BADC at set pricing.
- ✓ Within their assigned regions, dealers provide fertilizer to sub-dealers.
- ✓ Sub-dealers provide farmers direct sales at retail rates set by the government.

For instance, BCIC-appointed dealers who follow the government's monthly limits distribute urea.

Under stringent regulatory supervision, non-urea fertilizers are supplied via private importers as well as BADC channels.

Challenges in Distribution

- **Seasonal peaks in demand:** Demand for fertilizer is highest when planting during periods of seasonal peaks (November-March for Boro rice), leading to recurrent seasonal shortages.
- **Transport syndicates:** cause logistics costs to go up by 20–25% due to widespread corruption among the truckers and ultimately impact the efficiency of the supply chain.
- **Storage Limitations:** Current godowns exhibit inadequate capacity; for example, BADC's storage capacity is merely 1.55 lakh metric tons, while the annual demand surpasses 5 million tons.

Pricing Mechanism

The government significantly subsidizes fertilizers to maintain their affordability for farmers.

- **Urea:** Farmers incur a cost of ₳16 per kg, whilst production/import expenses surpass ₳96 per kg.
- **Non-Urea Fertilizers:** Subsidies vary from ₳23 to ₳49 per kilogram based on the kind (e.g., DAP or MOP).

Notwithstanding these incentives, logistical inefficiencies can result in localized price increases or shortages during peak seasons.

BCIC, BADC, private importers, and sub-dealers all have indispensable roles to play in maintaining and ensuring a seamless fertilizer supply chain, as dependence on this industry is sky-high in Bangladesh. However, while subsidies from the government encourage low costs for farmers, problems such as transportation inefficiencies, inadequate storage capacity, and heavy dependence on imports continuously hinder optimal functioning. Revamping regulatory updates-storages or reducing transport mafia syndicates-especially would go a long way and be enough to sustain production while securing food security amid the population escalation in Bangladesh.

CHAPTER IV: INVENTORY MANAGEMENT

4.1 Inventory Management

Inventory management includes all the processes with a product flow, such as ordering, storing, and eventually selling. Ensure that raw materials, work-in-progress, and manufactured products are available when required and at the lowest cost possible. Effective management of your products is key to meeting customer demand, reducing waste, and maximizing profit. It involves demand forecasting, optimal order size, storage methods, and inventory management systems, among other things. Effective inventory control can lead to both the overstocking and the stockout risks being lowered. It maintains the smooth flow of operations and helps you keep your customers satisfied. Present-day inventory management techniques use barcode scanners, RFID tags, inventory management tools, etc., to improve asset management accuracy and ease the pitfalls of managing an inventory. These tools help you monitor your product levels in real time, make decisions on data processing, and complete tedious tasks. It also looks at how that building works and how the products will move around it, as well as working with suppliers to make sure the entire supply chain operates seamlessly. The primary purpose of inventory control management is to maintain the ideal level of inventory in the right place, at the right time and at the right price. It involves continuous monitoring, research, and up-gradation to stay in line with the market fluctuation and demand. Improved inventory management practices can help businesses gain a better competitive advantage, increased assurances from customers, and sustainable growth in the medium to long term. In addition, practical issues such as stock control, that is to say, addressing financial issues such as the value of inventory, stock holding, obsolescence, etc. Having accurate stock levels not only accounts for income tax reporting but also controls moving rates, resulting in lower stock storage costs. It may cost you hand-to-mouth living, and, being a merchant, it is not about the goods that are either being sold or not people are interested in, but the loss that is naturally caused by depreciation if buying-selling is to take place. Companies typically manage with those monetized elements, leveraging ABC analysis, economic order quantity (EOQ) estimations and safety stock planning to work through that process.

In addition, the overall inventory management must be in line with the company's overall business strategy and objectives. It provides insight into inventory strategies and desired service levels, as well as creates KPIs to measure inventory. It will help you get insight into the areas that need improvement and ensure that the inventory management practices remain functional and in

accordance with the business's goals. Conduct frequent performance appraisals and align them with industry best practices. Moreover, inventory management contributes to supply chain stability and risk management through both proactive and reactive strategies. The rationale is that businesses can mitigate the effects of technical shocks, such as natural disasters and geopolitical events that lead to supply interruptions, through a combination of diversifying inputs, holding strategic stock in warehousing, and operational contingency planning. In addition to being an essential component of sustainability, it reduces waste, optimizes logistics and promotes more responsible consumption. This can improve brand image, bring in eco-sensitive consumers, and make a contribution to a greener supply chain. Thereby, it is a bit complex issue that requires diverse methods towards the best achievable results, which is remitted with the operational, fiscal, strategy and ecological areas of management.

4.2 F. Rahman & Brothers' Inventories

As a fertilizer distributor, F. Rahman & Brothers manages the following types of inventories:

Inventory Type	Description
Urea	Domestically produced nitrogen fertilizer crucial for rice cultivation. Sourced from BCIC plants.
Triple Super Phosphate (TSP)	Imported phosphorus fertilizer essential for root development and flowering. Primarily sourced from Morocco.
Muriate of Potash (MOP)	Imported potassium fertilizer enhancing disease resistance and fruit quality. Mainly imported from Belarus and Canada.
Diammonium Phosphate (DAP)	Imported fertilizer providing both nitrogen and phosphate, vital for balanced crop nutrition. Primarily sourced via a deal with Ma'aden in Saudi Arabia.

Table 04: Type of inventories of F. Rahman & Brothers

4.3 ABC Analysis of Fertilizer Inventories

ABC analysis divides stock items into three classes, A, B, and C, based on their value and impact on total inventory cost. See how this can be applied in fertilizer inventories of F. Rahman & Brothers:

Data Collection

Fertilizer Type	Annual Demand (Units)	Unit Cost (₹)	Annual Consumption Value (₹)	Cumulative Consumption Value (₹)	Cumulative Percentage (%)	Category
Urea	10000	27	270000	270000	42.86	A
DAP	8000	21	168000	438000	69.52	B
MOP	6000	20	120000	558000	88.57	B
TSP	5000	27	135000	693000	100	C

Table 05: Data collection of F. Rahman & Brothers

Calculations

- **Annual Consumption Value:** Multiply the once-a-year call for each fertilizer by its unit value. Example: Urea = 10,000 units X ₹27 = ₹270,000
- **Cumulative Consumption Value:** Add the once-a-year consumption value of each fertilizer to the cumulative intake cost of the previous fertilizers. Example: DAP = ₹270,000 (Urea) + ₹168,000 = ₹438,000
- **Cumulative Percentage:** Divide the cumulative consumption cost of each fertilizer using the full intake fee of all fertilizers, then multiply by a hundred. Example: DAP = (₹438,000 / ₹693,000) X 100 = 63.1%

ABC Categorization

- **Category A:** These items represent around 70-80% of total consumption value. High-value, high-maintenance items need to be closely monitored and controlled. In this instance, Urea is Category A.
- **Category B:** 15-25% of total consumption value. Have medium care and control over these items. DAP and MOP fall under Category B in this instance.
- **Category C:** Items that represent the last 5-10% of the total consumption value. These are low-value, low-fraud opportunities that need little control. So, in the above example, TSP is classified as Category C.

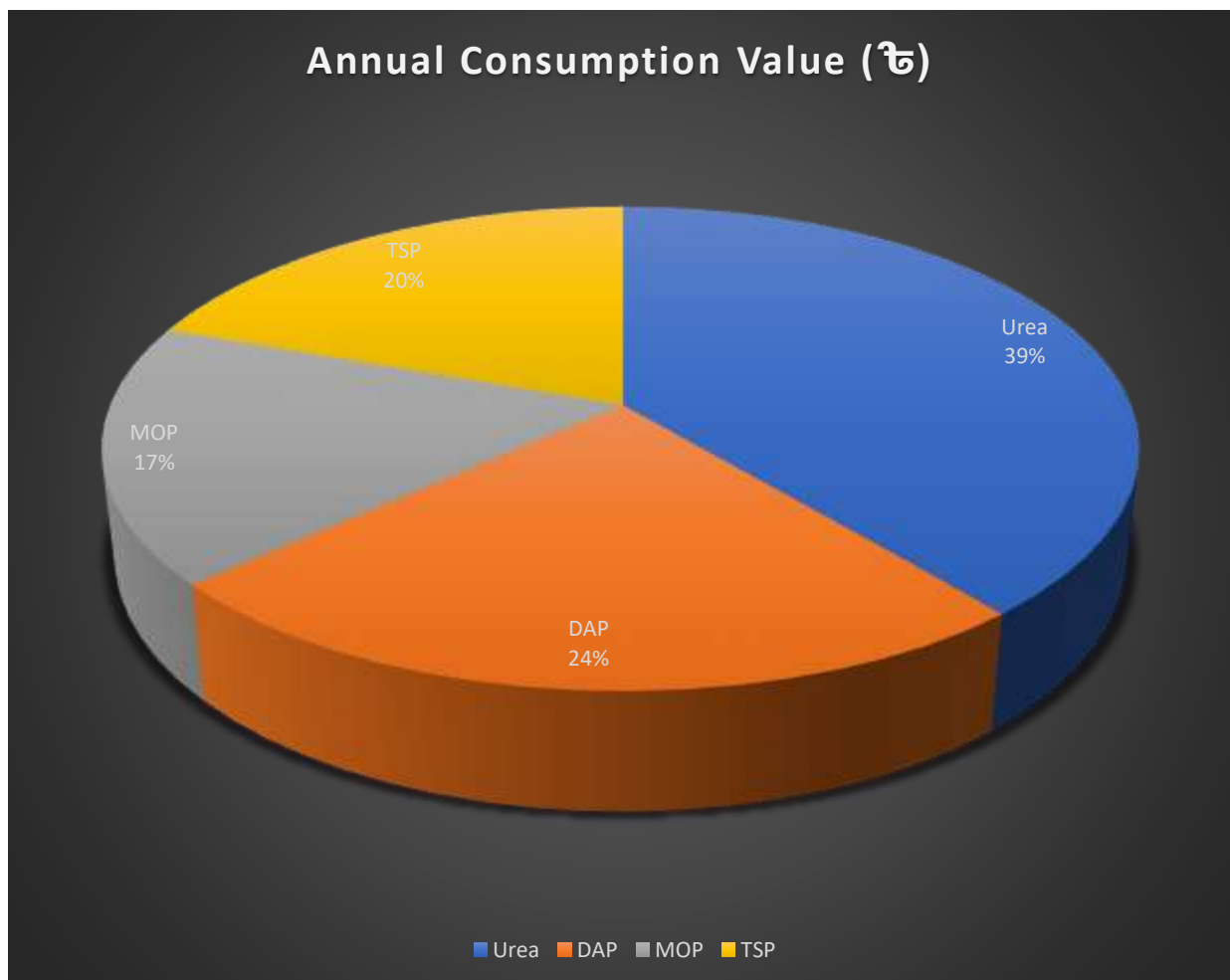


Table 06: Annual Consumption value of F. Rahman & Brothers

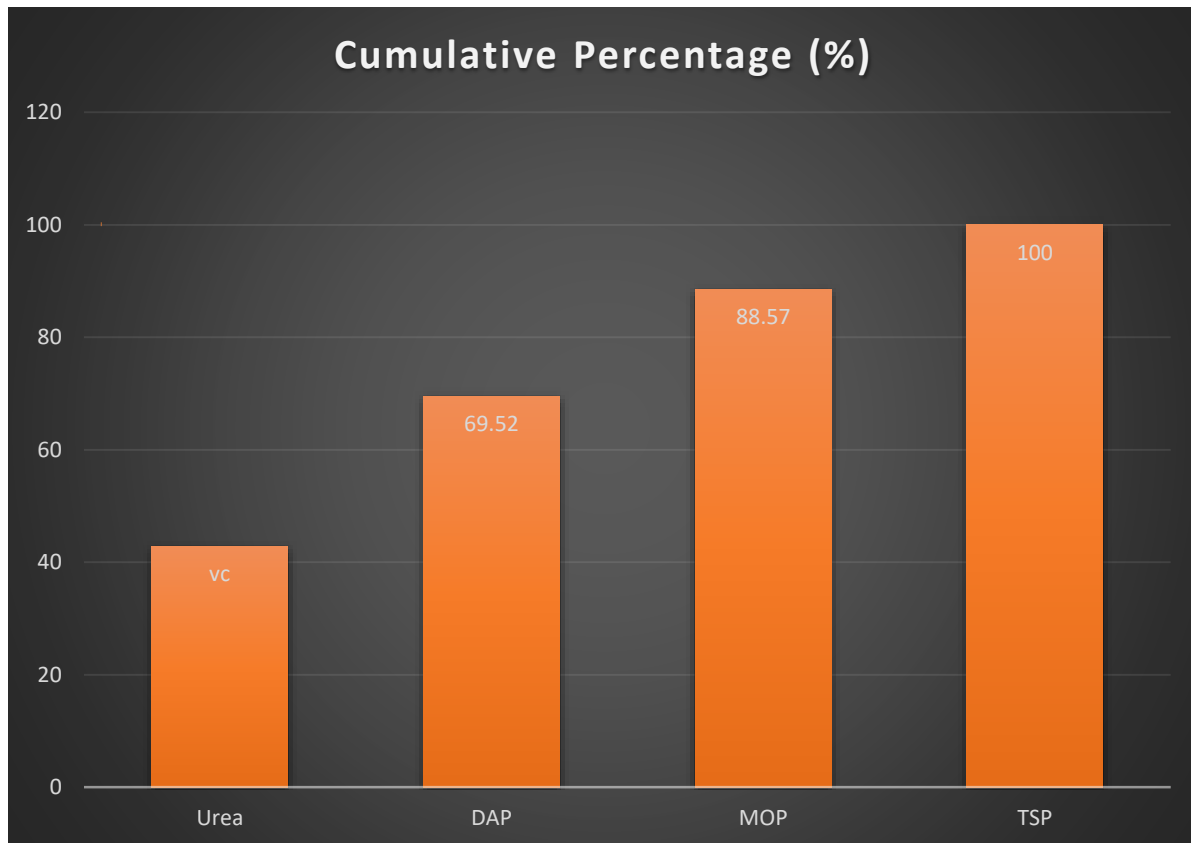


Table 07: Cumulative Percentage of F. Rahman & Brothers

Graph Explanation

- The ABC assessment graph visually represents the distribution of inventory fees throughout distinct fertilizer kinds.
- The bar graph shows the annual consumption fee for each fertilizer, with Urea having the very best value and TSP having the lowest fee.
- The cumulative percentage line shows the cumulative contribution of every elegance to the whole intake fee.
- Category A gadgets (Urea) have the best impact on usual stock prices and require near tracking and control.
- Category B items (DAP and MOP) have a slight impact on stock costs and require slight interest.
- Category C devices (TSP) have the lowest influence on stock expenditures and need little administration.

Category A (Urea): Urea is the most critical inventory item for F. Rahman & Brothers, representing a significant portion of the total inventory value. This necessitates stringent inventory control measures, including accurate demand forecasting, frequent monitoring of stock levels, and optimized ordering policies. Given its importance, F. Rahman & Brothers should prioritize maintaining an adequate supply of urea to meet customer demand and avoid stockouts. This may involve establishing strong relationships with BCIC, closely monitoring production schedules, and implementing safety stock policies to buffer against supply disruptions.

Category B (DAP and MOP): DAP and MOP are important inventory items that contribute a moderate portion to the total inventory value. These items require a balanced approach to inventory management, with moderate levels of monitoring and control. F. Rahman & Brothers should focus on improving demand forecasting accuracy, optimizing order quantities, and streamlining the procurement process to minimize costs and ensure timely availability. Additionally, the company should monitor market trends and adjust its inventory levels accordingly to avoid overstocking or stockouts.

Category C (TSP): TSP is the least critical inventory item for F. Rahman & Brothers, representing a small portion of the total inventory value. This allows for a more relaxed approach to inventory management, with minimal monitoring and control. F. Rahman & Brothers should focus on simplifying the ordering process, reducing administrative costs, and minimizing storage requirements for TSP. However, the company should still ensure that it maintains an adequate supply of TSP to meet customer demand, particularly during peak seasons.

By implementing ABC analysis and tailoring its inventory management strategies to each category, F. Rahman & Brothers can optimize its inventory levels, reduce costs, and improve overall efficiency. This will enable the company to better serve its customers, support the agricultural sector, and achieve its business objectives.

4.4 Inventory Management Location

F. Rahman & Brothers manipulated its stock in an 80×5080 instances 5080×50 feet godown (warehouse) situated in Kawkhali Dokkhin Bazar. This facility acts as the primary storage and distribution middle for fertilizers earlier than they're provided to the 32 sub-sellers for the duration

of five unions. The strategic function of the godown is critical for effective distribution and well-timed shipping to farmers inside the place. The godown is crucial for containing enough elements of both domestically generated and imported fertilizers. Effective control of this region is essential to ensure that fertilizers are saved securely and are effectively available for shipping. The employer ought to execute appropriate storage practices to avoid harm or deterioration of the fertilizers, which might result in losses and impair the exceptional of the goods given to farmers.

Efficient inventory management in the godown entails cautious monitoring of inventory degrees, standard inspections, and adherence to protection strategies. F. Rahman & Brothers have to preserve correct statistics of inventory inflows and outflows to trace the motion of fertilizers and ensure that there are no anomalies or losses. This involves installing a strong inventory control machine that permits the organization to reveal stock levels in actual time and make educated selections concerning replenishment. The area of the godown in Kawkhali Dokkhin Bazar is especially favorable due to its accessibility to neighborhood markets and transportation networks. This allows F. Rahman & Brothers to correctly distribute fertilizers to its sub-sellers and react swiftly to changes in call. However, the business enterprise must also bear in mind the limitations associated with strolling a warehouse in a faraway location, consisting of inadequate infrastructure, transportation bottlenecks, and protection issues.

To overcome those issues, F. Rahman & Brothers may additionally need to invest in strengthening the infrastructure surrounding its godown, collectively with roads and loading docks, to support the seamless transportation of fertilizers. The agency has to undertake security measures to guard its goods against theft or damage, including putting in surveillance cameras, using safety specialists, and developing admission-to-govern strategies. Furthermore, F. Rahman & Brothers intend to search for strategies to increase the structure and business of its godown to strengthen productiveness and lessen managing expenses. This may also need putting in a warehouse manipulator device (WMS) to automate stock monitoring, optimize the garage area, and speed up order success. In addition to its operational components, F. Rahman & Brothers ought to make sure that its godown adheres to all essential environmental standards and protection requirements. This calls for locating strategies to lessen pollutants, control garbage, and protect people's protection. In addition to its operational elements, F. Rahman & Brothers have to make sure that its godown adheres to all necessary environmental requirements and protection

requirements. This requires locating strategies to reduce pollution, manipulate rubbish, and defend people's safety. By complying with such standards, F. Rahman & Brothers may also further display its interest in sustainability and corporate obligation.

Therefore, the area and control of F. Rahman & Brothers' godown are essential components of its functionality to effectively distribute fertilizers and serve the rural enterprise in Kawkhali Upazila. By enhancing its warehouse operations and resolving the regulations connected with its area, the employer may also increase its stock control, cut prices, and improve its usual performance.

4.5 Fertilizer Sourcing

F. Rahman & Brothers receive their fertilizers from both local and foreign sources:

- **Urea:** This is supplied locally from BCIC (Bangladesh Chemical Industries Corporation) factories. BCIC maintains multiple urea fertilizer facilities around Bangladesh.
- **Non-Urea Fertilizers (TSP, MOP, DAP):** These are imported from countries such as Russia, Morocco, and China. The corporation procures these fertilizers via government-designated warehouses in Barishal, Jashore Noapara, and Bhola.

Inventory Type	Description	Source
Urea	Local fertilizer used for nitrogen supply in crops.	Bangladesh Chemical Industries Corporation (BCIC)
TSP (Triple Super Phosphate)	Imported fertilizer used for phosphorus supply.	External vendors
MOP (Muriate of Potash)	Imported fertilizer used for potassium supply.	External vendors
DAP (Diammonium Phosphate)	Imported fertilizer used for both nitrogen and phosphorus supply.	External vendors

Table 08: Fertilizer sources of F. Rahman & Brothers

The agency operates below a twin distribution machine, wherein urea is received directly from BCIC at a central authority-fixed fee, while non-urea fertilizers are supplied from worldwide sources. This necessitates F. Rahman & Brothers to collaborate with numerous government bodies and overseas providers to ensure a continuous and solid delivery of fertilizers. The delivery of fertilizers from many locations gives each benefit and trouble for F. Rahman & Brothers. Domestic purchase of urea offers a fairly dependable supply chain because the corporation might also rely on BCIC devices to fulfill its demands. However, home output may be vulnerable to disruptions due to problems such as gasoline shortages or preservation shutdowns.

International purchase of non-urea fertilizers permits F. Rahman & Brothers to get the right of entry to a more excellent giant assortment of commodities and services. However, it also exposes the firm to threats, including foreign money fluctuations, exchange restrictions, and geopolitical instability. To mitigate these risks, F. Rahman & Brothers ought to diversify its delivery sources and construct stable connections with numerous worldwide suppliers. The employer must additionally often examine worldwide market tendencies and trends to foresee changes in supply and call for. This would help F. Rahman & Brothers make informed choices regarding procurement and stock control and modify its plans. For instance, if there's a possibility of supply disruptions from a particular u. S. In other regions, the business enterprise may additionally need to enhance its stock tiers or look at other delivery sources. Furthermore, F. Rahman & Brothers have to take a look at whether its providers conform to ethical and environmental standards. This includes checking that suppliers comply with exertion standards, maintain the surroundings, and guide sustainable practices. By collaborating with moral carriers, F. Rahman & Brothers might also beef up its reputation and contribute to an additional sustainable delivery chain. In addition to these strategic troubles, F. Rahman & Brothers has to be conscious of boosting its procurement practices to store expenses and boost general performance. This may include implementing the e-procurement duration, negotiating exact situations with businesses, and dashing up the ordering method. By simplifying its procurement strategies, F. Rahman & Brothers may decrease its procurement prices and improve its standard competitiveness.

Therefore, the acquisition of fertilizers from each local and international belongings is a massive element of F. Rahman & Brothers' monetary activity. By diversifying its supply property, comparing international market tendencies, and improving its procurement techniques, the

business enterprise can offer a non-stop and sustainable delivery of fertilizers and resources to the rural sector in Kawkhali Upazila.

4.6 Distribution and Retail in Supply Chain Management

Distribution

F. Rahman & Brothers give fertilizers via a community of 32 sub-sellers distributed amongst five unions in Kawkhali Upazila. This distribution network is critical for making sure that fertilizers reach farmers in a timely and decisive way. The corporation distributes fertilizers to its sub-sellers, who, in the end, market the commodities to farmers in their specific areas.

The distribution approach supports critical steps:

- **Demand Forecasting:** F. Rahman & Brothers forecasts the request for fertilizers based entirely on facts about past profits, seasonal styles, and feedback from its sub-dealers.
- **Inventory Planning:** Based on the call for forecasts, the enterprise sets its inventory degrees to make sure that it has the perfect quantity of fertilizers to satisfy patron wishes.
- **Order Processing:** Sub-sellers region orders with F. Rahman & Brothers for the fertilizers they need.
- **Delivery:** F. Rahman & Brothers supplies the fertilizers to its sub-sellers, utilizing its very own vehicle fleet.
- **Monitoring:** The corporation examines the distribution process to ensure that fertilizers are provided on time and in incredible shape.

Effective distribution management is essential for protecting expenses, enhancing performance, and ensuring purchaser satisfaction. F. Rahman & Brothers wishes to be conscious of streamlining its distribution network, simplifying its logistics operations, and improving its hyperlink with sub-sellers to decorate the whole distribution technique. This may also consist of building a transportation control machine (TMS) to enhance routing and scheduling, applying GPS tracking to display cargo, and setting up clean communicate channels with sub-dealers to deal with any difficulties or court cases.

Retail

The retail of fertilizers is dealt with by the 32 sub-sellers who operate within the 5 unions of Kawkhali Upazila. These sub-sellers are responsible for promoting fertilizers without delay to farmers at government-regulated fees. The retail system entails several key steps:

- **Customer Service:** Sub-dealers give customer service to farmers, answering their queries, giving advice on fertilizer software, and resolving any problems they may have.
- **Sales:** Sub-dealers offer fertilizers to farmers at authorities-regulated charges.
- **Inventory Management:** Sub-dealers manipulate their own inventory stages to ensure that they have an ok delivery of fertilizers to satisfy consumer calls.
- **Payment Collection:** Sub-dealers gather bills from farmers for the fertilizers they buy.
- **Reporting:** Sub-sellers report their income and stock stages to F. Rahman & Brothers on a regular foundation.

Effective retail control is essential for maximizing sales, improving patron satisfaction, and making sure of compliance with authorities' policies. F. Rahman & Brothers should support its sub-dealers by imparting schooling and advertising materials to them and getting admission to financing. The organization also needs to monitor the retail system to make sure that sub-sellers comply with authorities' guidelines and supply brilliant customer service. This can also involve accomplishing ordinary audits of sub-provider operations, offering education on nice practices in retail control, and establishing a system for collecting feedback from farmers.

By effectively managing both the distribution and retail elements of its supply chain, F. Rahman & Brothers can make sure that fertilizers attain farmers in a timely and green manner, guide agricultural productiveness, and make contributions to the monetary improvement of Kawkhali Upazila.

CHAPTER V: INTERNSHIP EXPERIENCE

5.1 Position, Duties, and Responsibilities

Position

Supply Chain Intern at F. Rahman & Brothers (Authorized dealer of BCIC).

Duties

- **Supply Chain Analysis:** With fieldwork as our appraisal platform, we probed into the fertilizer distribution network of five unions to see whether logistics and inventory systems can run smoothly. This was done through questioning sub dealers and farmers, who helped us take care of some of our questionnaires.
- **Procurement and Inventory Management:** Participated in the procurement process and management of inventory sources in BCIC, evaluating all processes to keep stock on hand at optimum levels.
- **Transportation and Logistics:** Our contribution was the study of transportation systems by which to lower costs for all users apart from our own enterprise; we also found ways to shorten time spans between orders and deliveries, although this was actually less important to our survival than getting started with production as quickly as possible.
- **Regulatory Compliance:** Ensuring compliance with government regulations and policies affecting the Fertilizer sector.

Responsibilities

- **Data Analytics:** Increase the performance variation of the decision makers in supply chain optimization and distribution strategies.
- **Cooperation among Departments:** Joined forces with sales and operations teams to rectify supply chain problems and bring all products into play.
- **Feedback from Stakeholders:** Farmers and sub-dealers were asked for their input concerning distribution services. This feedback was later used to upgrade these items to make sure customers got what they wanted before long-term influence from our competition set in.

- **Generating Reports:** Produced reports covering supply chain status and future market developments to help shape the strategic direction for companies and planning efforts with universities or other research organizations.
- **Teamwork within the Work Units:** Coordinated the supply-chain strategies of different firm divisions with its overall business goals.
- **Market Observation:** To keep a competitive edge over competitors who are on the prowl and any changes in the marketplace which may occur, F. Rahman & Brothers constantly tracks its enemies' every move.

5.2 Training

During my internship at F. Rahman & Brothers, I acquired complete schooling that multiplied my information and experience within the dynamic fertilizer industry.

- **Orientation:** Introduced to the corporation's operations and the broader fertilizer marketplace in Bangladesh.
- **Supply Chain Management Techniques:** Acquired logistics, stock management, and supply chain analysis and optimization skills.
- **Regulatory Framework:** Acquired knowledge of the regulatory framework that oversees Bangladesh's fertilizer quarter.
- **Digital Tools:** Acquainted with supply chain management and inventory monitoring digital frameworks.

5.3 Contribution to Departmental Functions

I made significant contributions in many departments during my internship:

Supply Chain

- Worked on plans to mitigate transport costs while optimizing logistical efficiencies.
- Helped improve inventory efficiency – eliminating over-stocking or stocking out.
- Helped in enhancing collaboration with sub-dealers to widen the scope of distribution.

Logistics

- Assisted in streamlining inventory management processes to ensure prompt fertilizer deliveries.
- Collaborated with operations to ensure alignment of supply chain activities with company objectives.

Marketing

- Provided market data to develop marketing tactics to expose the brand to farmers.
- Assisted in the development of marketing collateral to engage more clients.

5.4 Evaluation

My supervisors and colleagues appreciated my contributions, emphasizing my ability to apply theoretical knowledge to practical supply chain challenges. In response to this feedback, my role was expanded to encompass additional strategic responsibilities.

5.5 Skills Applied

I applied many academic concepts during my internship:

- ✓ **Supply Chain Management:** Worked on supply chain and logistics and managed inventory processes.
- ✓ **Communication:** Utilized communication skills (oral & written) in stakeholder engagement and reporting.
- ✓ **Partnership:** Liaised and collaborated with different teams to achieve successful supply chain initiatives.
- ✓ **Problem-solving:** Resolved operational bottlenecks and proposed solutions.

5.6 New Skills Developed

I developed the following abilities in the course of my internship:

- **Supply Chain Analysis:** Gained exposure to analyzing and interpreting supply chain data to guide business decisions.
- **Report Writing:** Improved my skills in preparing practical and detailed reports for management.
- **Stakeholder Management:** Developed capabilities in handling relationships with sub-sellers and farmers.
- **Regulatory Compliance:** Gained expertise in navigating regulatory frameworks in the fertilizer quarter.

5.7 Application of Academic Knowledge

I applied the theoretical knowledge I gained from supply chain management to do the following:

- **Supply Chain Management:** Leveraged shipping and stock control expertise to enhance distribution efficiency.
- **Operations Management:** Leveraged concepts for efficient inventory management and minimizing bottlenecks.
- **Business Analytics:** Used analytics to assess supply chain performance and guide business decisions.

CHAPTER VI: RECOMMENDATIONS & CONCLUSION

6.1 Recommendations

Here are some recommendations for future interns at F. Rahman & Brothers:

- Implement a digital stock management system to improve tracking performance
- Establish buffer inventory policies for top agricultural seasons
- Develop contingency plans for transport syndicate-related disruptions
- Create standardized training packages for sub-dealers
- Invest in warehouse automation technology
- Establish direct communication channels with BCIC for higher coordination
- Implement performance metrics for sub-provider evaluation
- Develop sustainable packaging answers for fertilizer garage
- Create emergency reaction protocols for supply chain disruptions
- Establish high-quality manipulation measures all throughout the distribution network

6.2 Conclusion

F. Rahman & Brothers have an irreplaceable niche in Bangladesh's fertilizer supply system with a real predilection for the Kawkhali Upazila. The booming stock management baseline is the key to the choice of which products to guide communal agriculture and thus ensure safe food. The establishment handles a range of fertilizers, including urea, TSP, MOP, and DAP each with distinct source and demand properties. Strategic decisions on purchases are some of the most crucial, which would result in the reduction of costs, satisfaction with customer applications, and the ability to follow restrictions. The ABC analysis method helps to elaborate on stock management activities in terms of priority, especially in highly-priced electronics such as urea. The association godown in Kawkhali Dokkhin Bazar is the most critical storage and distribution facility the plant has, and thus, it requires management strategies that are both robust and time-appropriate, wherein both product and people are safe.

The tent that it took to go to local villages and towns and by boat from far away to the shipyard providers created such an inventory that the suppliers developed on their own. It is in this light that the very dynamic supply chain management (SCM), which combines domestic production and trade with offshore procurement, is in place to support a multitude of sourcing strategies and

customer demands. The updating of logistics, the broadening of storage capacity, and the integration of digital technology are some of the ways that would add value to F. Rahman & Brothers. Moreover, the idea of obtaining governance amendments, like moving the cost of insured freight to producers and the provision of stocks for a buffer, may be an incredible way to sustain the supply chain for fertilizers. To look to the future, F. Rahman & Brothers need to include sustainability and social responsibility. It is the set of tasks dealing with marketing the profound use of fertilizers, the inclusion of environmental shields, and fanning the welfare of farmers in the vicinity. The firm not only secures its position but also significantly contributes to the long-term success of Bangladesh's agricultural sector by combining creative methods, cohesion, and ethical principles. Ongoing revisions, tracking, and adaptation are the keys to being able to maintain relevant stocks and remain competitive with the corporation's strategies. Eventually, F. Rahman & Brothers can, yet again, do so through the growing process of local farmers and the agricultural sector of Bangladesh.

References

1. Quader, A. A. (2009). Strategy for developing the fertilizer sector in Bangladesh for sustainable agriculture. *Chemical Engineering Research Bulletin*, 13(2), 39-46.
2. Jaim, W. M. H., & Akter, S. (2012). Seed, fertilizer and innovation in Bangladesh: industry and policy issues for the future.
3. McCann, J., Sproule, K., Bliznashka, L., & Olney, D. (2023). Landscape analysis of early childhood development and agriculture in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka.
4. Shabur, M. A., Ali, M. F., & Alam, M. M. (2024). Analysis of the barriers and possible approaches for adopting Industry 4.0 in the fertilizer sector of Bangladesh. *Discover Applied Sciences*, 6(7), 369.
5. Ahmed, S., Islam, M. E., Hosen, M. T., & Hasan, M. H. (2020, January). BlockChain based fertilizer distribution system: Bangladesh perspective. In *Proceedings of the International Conference on Computing Advancements* (pp. 1-5).
6. Islam, N., & Mujeri, M. K. (2021). Fertilizer policy in Bangladesh: State intervention in markets and prices. *Securing food for all in Bangladesh*, 128.
7. Hossain, M. A., & Siddique, M. N. A. (2020). Online Fertilizer Recommendation System (OFRS): A step towards precision agriculture and optimized fertilizer usage by smallholder farmers in Bangladesh: online fertilizer recommendation. *European Journal of Environment and Earth Sciences*, 1(4).
8. Rahman, M. M., & Connor, J. D. (2022). Impact of agricultural extension services on fertilizer use and farmers' welfare: Evidence from Bangladesh. *Sustainability*, 14(15), 9385.
9. Islam, N., & Mujeri, M. K. (2021). Fertilizer in Bangladesh: State intervention in markets and prices.
10. Uddin, M. M. Challenges and Opportunities of Bangladesh Agriculture Sector: The Role of Chemical Fertilizer and Scope of Organic Farming. *Journal of Agriculture Sustainability and Environment ISSN*, 2997, 271X.
11. Ahmed, S., Islam, M. E., Hosen, M. T., & Hasan, M. H. (2020, January). BlockChain based fertilizer distribution system: Bangladesh perspective. In *Proceedings of the International Conference on Computing Advancements* (pp. 1-5).
12. Gazi, M. A. I. (2020). Supply chain management for agro products in Bangladesh; logistics support for capturing market by ensuring balanced distribution. *International Journal of Management, Accounting and Economics*, 7(6), 277-297.
13. Shareef, M. A., Dwivedi, Y. K., Kumar, V., Mahmud, R., Hughes, D. L., Rana, N. P., & Kizgin, H. (2020). The inherent tensions within sustainable supply chains: a case study from Bangladesh. *Production Planning & Control*, 31(11-12), 932-949.
14. Alam, M. F. B., Tushar, S. R., Ahmed, T., Karmaker, C. L., Bari, A. M., de Jesus Pacheco, D. A., ... & Islam, A. R. M. T. (2024). Analysis of the enablers to deal with the ripple effect in food grain supply chains under disruption: implications for food security and sustainability. *International Journal of Production Economics*, 270, 109179.
15. Putro, P. A. W., Purwaningsih, E. K., Sensuse, D. I., & Suryono, R. R. (2022). Model and implementation of rice supply chain management: A literature review. *Procedia Computer Science*, 197, 453-460.