Thesis Paper

on

"Sustainable Operations in the RMG Sector: Aligning Import-Export Practices with Green Supply Chain Requirements"

Submitted by:

Md. Masum Akonda

ID: MSCM2401031021

Program: MBA in Supply Chain Management (MSCM)

Major: Supply Chain Management

Department of Business Administration

Sonargaon University (SU)

Submitted to:

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Sonargaon University (SU)

147/1 Green Road, Panthapath, Tejgaon, Dhaka

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Date of Submission: January 03, 2026

Letter of Transmittal

January 03, 2026

Shahnaz Sharmin
Lecturer
Department of Business Administration
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Subject: Submission of thesis report titled **"Sustainable Operations in the RMG Sector: Aligning Import-Export Practices with Green Supply Chain Requirements".**

Dear Madam,

I am hereby submitting my thesis paper entitled **"Sustainable Operations in the RMG Sector: Aligning Import-Export Practices with Green Supply Chain Requirements"** which was assigned to me as a requirement for the completion of the MSCM Program. I have discovered this paper very interesting, beneficial, and insightful. The entire report is based on my practical experience in Commercial department I expect this paper to be informative as well as comprehensive. This thesis paper will help me a lot in my future career life.

Thank you very much for your guidance and cooperation during the course without which this Thesis paper cannot be completed. Moreover, if you have any further inquiries concerning any Additional information, I would be very pleased to clarify that.

Yours Sincerely

_____

Md. Masum Akonda
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Declaration of Student

This is to notify you that, the thesis paper on **"Sustainable Operations in the RMG Sector: Aligning Import-Export Practices with Green Supply Chain Requirements"**, has been prepared as a part of my dissertation formalities. It is an obligatory part of me.

MSCM program to submit a thesis paper. Moreover, I was inspired and instructed by **Shahnaz Sharmin,** Lecturer, Department of Business Administration, Sonargaon University (SU). I am further declaring that I did not submit this report anywhere for awarding any degree or certificate.

Yours Sincerely

Md. Masum Akonda
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Letter of Authorization

This is to certify that the thesis report **"Sustainable Operations in the RMG Sector: Aligning Import-Export Practices with Green Supply Chain Requirements"** has been prepared as a part of completion of the MSCM program from Department of Business Administration, Sonargaon University (SU), carried out by **Md. Masum Akonda,** bearing **ID: MSCM2401031021** under my supervision. The report or the information will not be used for any other purposes.

_____

Shahnaz Sharmin

Lecturer

Department of Business

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Acknowledgment

Praise by Allah & thanks to Allah for patronizing me to finish this thesis report. I am very happy to finish it. It is a great Research of my life. It is a long cherished hope of my life to become a great supply chain professional. That's why I have admitted in the Department of Business Administration in Sonargaon University (SU) to fulfill my dream. But through my whole study life in this field, I did not get much more opportunities to examine and show my knowledge and skill in this wide field. Lastly I have got a great chance to make my study meaningful when I got the chance to prepare a thesis report **"Sustainable Operations in the RMG Sector: Aligning Import-Export Practices with Green Supply Chain Requirements"**.

I acknowledge my grateful to respected supervisor **Mst. Shahnaz Sharmin** for instructing me how to prepare a thesis report and her famous Books lectures on this subject help me to complete my task sincerely.

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Abstract

The Ready-Made Garment (RMG) sector plays a crucial role in Bangladesh's economy, yet its import-export operations often lack full alignment with emerging green supply chain requirements. As global buyers increasingly demand environmentally responsible sourcing, waste reduction, and carbon-efficient logistics, ensuring sustainable operations has become essential for continued competitiveness and compliance. This growing pressure highlights the importance of researching how RMG firms can integrate greener practices into their international trade activities.

Despite various sustainability initiatives, a significant gap remains in understanding how import-export processes-such as raw material sourcing, customs procedures, packaging, and transportation-can be systematically aligned with green supply chain standards. The purpose of this study is to identify these gaps and propose practical ways for RMG companies to improve environmental performance without disrupting operational efficiency.

This research uses a sample of selected RMG companies in Dhaka, collecting data through structured questionnaires and interviews with supply chain professionals. Quantitative data were analyzed using Excel and SPSS to examine patterns, relationships, and operational challenges linked to sustainability adoption.

The findings indicate that improved supplier compliance, optimized transportation planning, and eco-friendly packaging are key drivers for greener import-export operations. The results also show that firms with higher digitalization and stronger buyer collaboration achieve better alignment with green supply chain requirements.

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List of Acronyms

SU	Sonargaon University
MBA	Master of Business Administration
RMG	Ready-Made Garments
ERP	Enterprise Resource Planning
MTO	Make To Orders
RFID	Radio-Frequency Identification
AGM	Annual General Meeting
NBR	National Board of Revenue
SCM	Supply Chain Management
KPI	Key Performance Indicator
B2B	Business to Business
C2C	Consumer to Consumer
ERC	Export Registration Certificate
DC	Distribution Center
NOC	No Objection Certificate
IRC	Import Registration Certificate
TQM	Total Quality Management
ECR	Efficient Consumer Response
GPS	Global Positioning System
MSCM	Master of Supply Chain Management

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Ready-Made Garments (RMG) sector of Bangladesh has emerged as one of the most significant contributors to the global apparel supply chain and the national economy. Over the past four decades, the sector has transformed Bangladesh from an agrarian economy into a leading apparel-exporting nation, supplying garments to some of the world's most prominent fashion brands. Currently, the RMG sector accounts for more than 80 percent of the country's total export earnings and employs millions of workers, making it a cornerstone of industrial development, employment generation, and foreign exchange earnings. The sector's competitiveness has traditionally been driven by cost efficiency, large-scale production capacity, and access to international markets.

However, the global apparel industry has undergone a profound transformation in recent years. International buyers and consumers are no longer focused solely on price, quality, and delivery lead time. Instead, sustainability, ethical sourcing, transparency, and environmental responsibility have become central criteria in supplier evaluation and sourcing decisions. Major global brands-particularly those operating in Europe and North America have adopted Environmental, Social, and Governance (ESG) frameworks to assess supplier performance. These frameworks require suppliers not only to ensure socially responsible labor practices but also to demonstrate measurable environmental improvements across their operations.

In response to buyer pressure and regulatory requirements, Bangladesh's RMG sector has made remarkable progress in sustainable manufacturing. The country now hosts the highest number of Leadership in Energy and Environmental Design (LEED)-certified green garment factories in the world. Significant investments have been made in wastewater treatment plants, energy-efficient machinery, renewable energy solutions, and green building infrastructure. These initiatives have positioned Bangladesh as a global example of environmentally responsible apparel manufacturing.

Despite these achievements, sustainability efforts within the RMG sector remain largely concentrated within factory boundaries. While production-related environmental performance has improved substantially, the sustainability of upstream and downstream trade operations-particularly import and export activities-has not

progressed at the same pace. Import-export operations are essential components of the RMG supply chain, involving raw material sourcing, international transportation, freight forwarding, packaging, customs clearance, warehousing, and extensive documentation processes. Each of these activities contributes significantly to carbon emissions, energy consumption, material waste, and environmental degradation.

From an environmental perspective, import-export operations are often more carbon-intensive than manufacturing itself. Long-distance transportation, inefficient logistics planning, heavy reliance on fossil-fuel-based transport modes, excessive packaging materials, and paper-based trade documentation collectively increase the environmental footprint of the RMG supply chain. As global supply chains become increasingly transparent, buyers now expect suppliers to manage environmental impacts not only at the factory level but across the entire value chain.

Global sustainability frameworks such as Green Supply Chain Management (GSCM) emphasize the integration of environmental considerations into all supply chain activities-from sourcing and production to logistics and distribution. GSCM principles require firms to adopt green logistics practices, eco-friendly packaging solutions, digital trade documentation, and compliance with international environmental standards. For Bangladesh's RMG sector, aligning import-export practices with green supply chain requirements has therefore become a strategic necessity rather than a voluntary initiative.

Failure to integrate sustainability into trade operations threatens the sector's long-term competitiveness. As buyer requirements become more stringent and regulatory pressures increase, RMG exporters risk losing market access if they cannot demonstrate end-to-end sustainability. Consequently, this study focuses on sustainable operations within the RMG sector, with particular emphasis on aligning import-export practices with global green supply chain requirements.

1.2 Problem Statement

Although Bangladesh's RMG factories have made notable advancements in sustainable manufacturing, sustainability initiatives remain largely confined to production processes. Environmental compliance efforts are primarily driven by factory audits,

certifications, and buyer inspections, which tend to focus on energy usage, water management, waste treatment, and chemical handling within factory premises. In contrast, trade-related operations-such as inbound logistics for raw materials, outbound logistics for finished goods, packaging practices, transportation mode selection, documentation workflows, and customs procedures have received relatively limited attention from both industry practitioners and policymakers.

This imbalance has created a significant disconnect between production-level sustainability and broader supply chain sustainability. While factories may meet environmental standards within the production floor, their overall sustainability performance is weakened by traditional, carbon-intensive import-export practices. Common issues include heavy reliance on fossil-fuel-based transportation, frequent use of air freight for urgent shipments, excessive use of single-use plastic packaging, paper-based documentation systems, and limited adoption of shipment consolidation or route optimization strategies.

Furthermore, many RMG firms lack structured policies, performance indicators, and monitoring mechanisms related to sustainability in trade operations. Import-export decisions are often driven by cost, speed, and operational convenience rather than environmental considerations. Logistics service providers and freight forwarders operating within the sector frequently lack environmental awareness or incentives to adopt green practices. As a result, sustainability efforts remain fragmented and inconsistent across the supply chain.

This gap is particularly concerning in the context of evolving global buyer expectations. International brands increasingly demand end-to-end green supply chains, requiring suppliers to demonstrate environmental responsibility throughout sourcing, production, logistics, and distribution. Failure to integrate sustainability into import-export operations may result in reduced competitiveness, non-compliance with international standards, reputational risks, and potential loss of long-term market access.

Despite the growing importance of sustainable trade operations, existing academic research on Bangladesh's RMG sector has largely focused on manufacturing sustainability, labor compliance, and factory-level environmental performance. Limited empirical attention has been given to import-export sustainability, especially in relation

to alignment with global green supply chain requirements. This research gap highlights the need for a systematic investigation into current import-export practices, sustainability challenges, and potential alignment strategies within the RMG sector.

Therefore, this study addresses the pressing need to assess existing import-export operations, identify sustainability gaps, and develop a practical operational model for aligning trade activities with global green supply chain requirements.

1.3 Research Questions

To address the identified problem and contribute meaningful insights to the field of sustainable supply chain management, this study is guided by the following research questions:

1. What sustainable practices are currently being used in RMG import and export operations?

This question seeks to examine existing practices related to green logistics, transportation planning, packaging materials, digital trade documentation, and environmental compliance in import-export activities of RMG firms.

2. What gaps exist between current import-export practices and global green supply chain requirements?

This question aims to identify deviations from international best practices, buyer expectations, and recognized sustainability frameworks such as Green Supply Chain Management (GSCM), ISO 14001 Environmental Management Systems, and carbon reporting standards.

3. How can RMG companies align their import-export operations with international sustainability standards?

This question focuses on developing a practical framework or set of strategic recommendations that RMG firms can implement to enhance environmental responsibility, ensure global compliance, and improve supply chain sustainability performance.

1.4 Objectives of the Study

To systematically explore the research questions and contribute to both academic and practical knowledge, this study aims to achieve the following objectives:

- **To examine current import-export practices in the RMG sector.** This objective involves analyzing logistics procedures, transportation modes, packaging practices, documentation workflows, customs clearance processes, and compliance with buyer requirements from a sustainability perspective.

- **To identify sustainability gaps in trade operations.**
  This objective seeks to evaluate where existing import-export practices fall short of international environmental standards, green logistics principles, and digital supply chain expectations.
- **To propose a model for aligning import-export activities with global green supply chain standards.**
  Based on empirical findings, this objective aims to develop a structured framework that RMG firms can apply to reduce carbon emissions, enhance transparency, improve compliance, and strengthen sustainability performance across trade operations.

1.5 Significance of the Study

This research holds significant importance for multiple stakeholder groups, including industry practitioners, policymakers, academics, and global supply chain professionals.

- For **RMG managers and industry practitioners**, the study provides actionable insights into improving sustainability in import-export operations. By identifying practical strategies for green logistics, sustainable packaging, and digital trade facilitation, the findings can help firms reduce environmental impact while improving operational efficiency and brand reputation.
- For **policymakers and regulatory authorities**, the study highlights critical areas requiring policy intervention, infrastructure development, and incentive mechanisms to promote sustainable trade practices. The findings can support the formulation of policies that encourage green logistics adoption, paperless trade systems, and environmentally responsible transportation.
- For **supply chain and logistics professionals**, the research contributes decision-making frameworks related to cargo consolidation, transportation planning, carbon reporting, supplier selection, and trade documentation digitization.

- From an **academic perspective**, the study extends existing literature on sustainability in the RMG sector by shifting the focus from manufacturing to import-export operations. It addresses a notable research gap and contributes empirical evidence from a developing-country context.

Ultimately, this study supports Bangladesh's strategic vision of becoming a global leader in sustainable apparel production by ensuring that environmental responsibility is embedded throughout the entire import-export value chain rather than being limited to factory-level operations.

1.6 Scope of the Study

The scope of this study is confined to the import-export operations of export-oriented RMG firms operating in Bangladesh. The study focuses on sustainability-related aspects of logistics, transportation, packaging, documentation, and environmental compliance. While manufacturing sustainability is discussed for contextual purposes, the primary emphasis remains on trade operations and their alignment with green supply chain requirements.

1.7 Structure of the Thesis

The thesis is organized into five chapters. Chapter One introduces the research background, problem statement, objectives, and significance. Chapter Two reviews relevant literature on sustainability, green supply chain management, and sustainable trade operations. Chapter Three outlines the research methodology. Chapter Four presents data analysis and findings. Chapter Five concludes the study and provides recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A literature review serves as the intellectual backbone of academic research by systematically examining existing theories, empirical studies, and conceptual frameworks relevant to the research topic. It allows the researcher to position the study within the existing body of knowledge, identify theoretical foundations, and highlight research gaps that justify the necessity of the current investigation (Saunders et al., 2019). In the context of sustainability research, literature review plays an even more critical role, as sustainability is a multidimensional concept encompassing environmental, economic, and social dimensions across complex global supply chains.

For export-oriented industries such as Bangladesh's Ready-Made Garments (RMG) sector, sustainability has evolved from a voluntary corporate initiative into a strategic and regulatory requirement driven by global buyers, governments, and international organizations. While a substantial body of literature exists on sustainable manufacturing practices in the apparel industry, comparatively limited attention has been given to sustainability in import-export operations, particularly in developing countries. Import-export activities-such as inbound raw material sourcing, international logistics, packaging, trade documentation, customs clearance, and outbound distribution-constitute critical nodes of environmental impact within global supply chains.

This chapter reviews relevant literature on sustainability in supply chain management, Green Supply Chain Management (GSCM), sustainable import-export operations, global green supply chain requirements in the apparel industry, and the specific context of Bangladesh's RMG sector. By synthesizing global theories, empirical findings, and regional studies, the chapter establishes a theoretical and conceptual foundation for analyzing how import-export practices in the RMG sector can be aligned with green supply chain requirements. Furthermore, it identifies significant research gaps that justify the focus of this study on sustainable trade operations rather than factory-level production alone.

2.2 Concept of Sustainability in Supply Chain Management

2.2.1 Definition of Sustainability

The concept of sustainability was formally introduced in the Brundtland Commission's report *Our Common Future*, which defined sustainability as development that meets present needs without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987). This definition emphasizes long-term responsibility, intergenerational equity, and balanced resource utilization.

Within the discipline of supply chain management, sustainability extends beyond environmental protection to include economic viability and social responsibility. This integrated perspective is commonly conceptualized through the Triple Bottom Line (TBL) framework, which emphasizes **People, Planet, and Profit** (Elkington, 1997). Carter and Rogers (2008) further argue that sustainable supply chains must simultaneously achieve environmental stewardship, social well-being, and economic performance in a coordinated manner.

In relation to this study, sustainability is not treated as an abstract or generic concept but is specifically defined as the adoption of environmentally responsible and resource-efficient practices in **import-export operations** of the RMG sector. This includes reducing carbon emissions from transportation, minimizing packaging waste, adopting paperless trade documentation, and ensuring compliance with international environmental standards across cross-border trade activities.

2.2.2 Evolution toward Sustainable Supply Chains

Traditional supply chains were historically designed to optimize cost, speed, and efficiency, often at the expense of environmental and social considerations. However, increasing environmental degradation, climate change concerns, and stakeholder pressure have driven a paradigm shift toward sustainable supply chain management (Pagell & Wu, 2009).

Seuring and Müller (2008) emphasize that sustainability must be embedded across the entire supply chain, from raw material sourcing to final product delivery. This holistic approach recognizes that environmental impacts do not originate solely from manufacturing but also from upstream and downstream activities, including transportation, warehousing, packaging, and trade facilitation processes.

The evolution toward sustainable supply chains has been influenced by several factors:

- Globalization of production and trade
- Increased visibility of supply chain environmental impacts
- Pressure from multinational buyers and NGOs
- Regulatory interventions and trade-related environmental policies
- Growing consumer awareness of ethical and sustainable products

For export-dependent industries, sustainability has become closely linked to market access and competitiveness. Consequently, supply chain sustainability has expanded to include **green logistics**, **sustainable sourcing**, **eco-friendly packaging**, and **digital trade processes**, all of which are central to import-export operations.

2.2.3 Relevance to the RMG Sector

The Ready-Made Garments sector of Bangladesh represents one of the most globally integrated manufacturing industries, heavily reliant on international sourcing of raw materials and export of finished goods. As a result, sustainability challenges in the RMG sector extend far beyond factory premises.

Islam and Deegan (2010) argue that export-oriented apparel industries face heightened sustainability scrutiny due to buyer-driven governance structures. International brands increasingly demand transparency and environmental responsibility across the entire supply chain, including logistics and trade operations. Mitra and Datta (2014) further highlight that sustainability expectations now encompass material sourcing, packaging standards, transportation emissions, and compliance documentation.

Therefore, sustainability in the RMG sector must be understood as a supply chain-wide concept where **import-export operations play a critical role** in achieving overall environmental performance. Failure to integrate sustainability into trade operations can undermine factory-level achievements and weaken compliance with global green supply chain requirements.

2.3 Green Supply Chain Management (GSCM)

2.3.1 Definition and Components

Green Supply Chain Management (GSCM) refers to the integration of environmental considerations into traditional supply chain activities, including product design, sourcing, manufacturing, logistics, and end-of-life management (Srivastava, 2007). GSCM aims to reduce environmental impacts while maintaining operational efficiency and customer satisfaction.

Key components of GSCM include:

- Green procurement
- Green manufacturing
- Green logistics
- Eco-friendly packaging
- Reverse logistics
- Waste reduction and recycling

Among these components, **green logistics and eco-friendly packaging** are particularly relevant to import-export operations. Zhu et al. (2008) emphasize that logistics-related emissions and packaging waste constitute a significant portion of supply chain environmental footprints, especially in globally dispersed industries such as apparel manufacturing.

2.3.2 Theoretical Frameworks Supporting GSCM Adoption

Several theoretical perspectives explain why firms adopt green supply chain practices:

- **Resource-Based View (RBV)**
  RBV suggests that firms can achieve competitive advantage by developing unique internal capabilities such as green logistics expertise, energy-efficient transportation planning, and sustainable packaging systems (Barney, 1991; Hart, 1995). In the context of import-export operations, firms that invest in digital trade systems and low-carbon logistics gain strategic advantages.
- **Institutional Theory**
  Institutional theory explains sustainability adoption as a response to coercive, normative, and mimetic pressures from regulators, buyers, and industry peers

(DiMaggio & Powell, 1983). For RMG exporters, buyer-imposed sustainability requirements strongly influence import-export practices.

- **Stakeholder Theory**

  Stakeholder theory emphasizes balancing the interests of multiple stakeholders, including buyers, suppliers, logistics providers, regulators, and communities (Freeman, 1984). Sustainable trade operations help firms manage stakeholder expectations and reduce reputational risks.

These frameworks collectively justify the focus on aligning import-export operations with green supply chain requirements.

2.3.3 Empirical Evidence on GSCM

Empirical studies indicate that GSCM adoption leads to improved environmental performance, cost efficiency, enhanced corporate image, and stronger buyer relationships (Zhu et al., 2012; Green et al., 2015). However, studies in developing economies reveal persistent challenges such as high implementation costs, inadequate infrastructure, and limited managerial expertise (Govindan et al., 2014).

Notably, much of the empirical literature focuses on manufacturing-related practices, leaving import-export sustainability underexplored. This gap is particularly evident in the apparel industry, where logistics and trade operations account for a significant share of environmental impact.

2.4 Sustainable Import and Export Operations

2.4.1 Import-Export as a Core Element of GSCM

Import-export operations are integral components of global supply chains and significantly influence environmental performance. Rodrigue et al. (2017) argue that transportation, warehousing, packaging, and customs procedures collectively contribute to carbon emissions, energy consumption, and resource depletion.

McKinnon (2018) highlights that logistics-related activities often account for up to one-third of total supply chain emissions in global industries. Therefore, sustainability in supply chains cannot be achieved without addressing import-export operations.

2.4.2 Key Dimensions of Sustainable Trade Operations

Green Logistics

Green logistics aims to minimize environmental impacts through route optimization, shipment consolidation, fuel-efficient transport modes, and intermodal transportation (Dekker et al., 2012). Sea freight is generally preferred over air freight due to its lower carbon intensity.

Eco-Friendly Packaging

Sustainable packaging reduces waste and environmental harm through recyclable, biodegradable, and reusable materials (Verghese & Lewis, 2007). Apparel brands increasingly mandate reduced plastic usage and standardized packaging.

Digitalization of Trade Documentation

Digital trade documentation reduces paper consumption, improves efficiency, and enhances transparency. Technologies such as e-bills of lading and electronic customs declarations are increasingly promoted by international
trade organizations (UNCTAD, 2020).

Environmental Compliance and Certifications

Compliance with standards such as ISO 14001, the EU Green Deal, and buyer codes of conduct is essential for sustainable import-export operations. Non-compliance may result in shipment delays or loss of market access.

2.5 Global Green Supply Chain Requirements in the Apparel Industry

2.5.1 Buyer Expectations

International apparel brands increasingly require suppliers to demonstrate end-to-end sustainability. Buyer expectations extend beyond factory audits to include logistics emissions, sustainable packaging, and transparent trade documentation (Locke, 2013).

2.5.2 Regulatory Frameworks Affecting Global Trade

Regulations such as the EU's Carbon Border Adjustment Mechanism (CBAM), GRI standards, SBTi targets, and IMO emissions rules directly influence import-export planning and logistics decision-making (IMO, 2020; GRI, 2021).

2.5.3 Global Green Logistics Trends

Emerging trends include electric freight vehicles, solar-powered warehouses, and digital freight platforms (McKinsey, 2022). These trends represent future opportunities for RMG exporters.

2.6 Green Supply Chain Practices in Bangladesh's RMG Sector

2.6.1 Progress in Sustainable Manufacturing

Bangladesh has achieved global recognition for green garment manufacturing through LEED-certified factories and investments in energy-efficient technologies (BGMEA, 2023). However, these achievements are largely confined to factory-level operations.

2.6.2 Gaps in Import-Export Sustainability

Despite manufacturing progress, trade-related sustainability remains weak. Studies highlight reliance on fossil-fuel logistics, excessive plastic packaging, paper-based documentation, and minimal carbon reporting (Rahman et al., 2020).

2.6.3 Barriers to Adoption

Key barriers include high costs, inadequate infrastructure, limited incentives, regulatory gaps, and resistance to change (Islam et al., 2017; Hasan et al., 2019).

2.7 Conceptual Framework of the Study

Based on the literature, this study adopts a framework consisting of:

1. Existing import-export practices
2. Gap analysis against global green requirements
3. Alignment strategies for sustainable trade operations

2.8 Summary

The literature demonstrates that while sustainability has gained prominence across global supply chains, import-export operations in Bangladesh's RMG sector remain insufficiently aligned with green supply chain requirements. Existing research focuses heavily on manufacturing sustainability, leaving trade operations underexplored. This gap provides a strong justification for the present study, which seeks to evaluate current practices, identify gaps, and propose a sustainability-aligned import-export model for the RMG sector.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methodological framework adopted to examine sustainable import-export practices within Bangladesh's Ready-Made Garments (RMG) sector. It outlines the research design, approach, population and sampling strategy, data collection methods, research instruments, data analysis techniques, and ethical considerations.

The primary objective of the study is to assess existing import-export practices, identify sustainability-related gaps, and evaluate the extent to which current operations align with global green supply chain requirements. To achieve these objectives, the study follows a **quantitative-dominant descriptive research design**, supported by **qualitative insights** to enrich interpretation and contextual understanding. This approach allows the research to systematically measure sustainability practices while also incorporating professional perspectives from key industry stakeholders.

The chapter is organized to ensure methodological transparency and to demonstrate the reliability and validity of the research findings.

3.2 Research Design

The study adopts a **descriptive research design with a quantitative focus**, complemented by qualitative insights. A descriptive design is appropriate because the research seeks to document, measure, and analyze existing import-export practices rather than manipulate variables or establish causal relationships.

Quantitative data form the core of the analysis by providing measurable evidence on sustainability adoption levels, compliance status, and operational gaps. Qualitative inputs are used as a supportive element to clarify practical challenges, explain observed patterns, and provide industry-based interpretations.

This design is particularly suitable for sustainability studies in the RMG sector, where standardized operational indicators coexist with experience-based managerial judgments.

3.2.1 Quantitative Research Design

The quantitative component of the study is based on a structured survey questionnaire administered to professionals directly involved in import-export and logistics activities within the RMG supply chain. This design enables the study to:

- Measure the extent of adoption of sustainable import-export practices
- Assess environmental performance in logistics, packaging, and documentation
- Identify compliance gaps with international sustainability requirements
- Compare practices across different firm sizes, operational roles, and export destinations

The use of standardized questions and Likert-scale measurements ensures consistency, objectivity, and statistical reliability.

3.2.2 Qualitative Supporting Insights

To enhance the explanatory power of quantitative findings, limited qualitative insights were collected through semi-structured interviews with selected industry professionals, including logistics managers, compliance officers, freight forwarders, and procurement personnel.

Rather than serving as a separate methodological stream, these insights function as **contextual support**, helping to:

- Explain operational constraints behind numerical trends
- Capture professional experiences related to sustainability implementation
- Identify policy, infrastructure, and capability-related challenges
- Validate survey findings through practitioner perspectives

This supporting role strengthens interpretation without altering the quantitative dominance of the research design.

3.3 Research Approach

The study follows a **descriptive and exploratory research approach**:

- **Descriptive**, as it documents existing import-export processes, sustainability practices, and compliance levels within the RMG sector
- **Exploratory**, as research on sustainable trade logistics and green import-export operations in Bangladesh remains limited, requiring investigation into emerging practices and challenges

This combined approach allows the study to both present factual conditions and explore new sustainability dimensions relevant to policy and managerial decision-making.

3.4 Population and Sampling

3.4.1 Population of the Study

The target population comprises professionals and organizations directly involved in import-export and logistics operations within the RMG sector. These include:

- RMG factories (commercial, import-export, and supply chain departments)
- Buying houses and sourcing offices
- Freight forwarding and logistics service providers
- Shipping agents and customs-related intermediaries
- Compliance and sustainability professionals

These stakeholders collectively influence trade efficiency, environmental performance, and compliance with global green supply chain standards.

3.4.2 Sampling Technique

A **purposive sampling technique** was applied, as respondents were required to possess specific knowledge and hands-on experience related to import-export procedures and sustainability requirements.

This technique ensures that data are collected from informed professionals who can provide accurate and relevant responses aligned with the research objectives.

3.4.3 Sample Size

The study uses the following sample structure:

- **Quantitative survey**: approximately **50-100 respondents** from RMG firms and logistics service providers
- **Qualitative interviews**: **8-12 key informants** representing different operational roles

This sample size balances breadth and depth while remaining appropriate for academic research at the master's level.

3.5 Data Collection Methods

3.5.1 Primary Data Collection

Primary data were collected through two structured methods:

1. Survey Questionnaire

A structured questionnaire was developed to collect numerical and categorical data on:

- Existing import-export procedures
- Sustainable logistics practices
- Use of eco-friendly packaging materials
- Adoption of digital documentation systems
- Compliance with international sustainability and buyer requirements

The questionnaire was administered both online and in printed form to ensure accessibility and response diversity.

2. Semi-Structured Interviews

Semi-structured interviews were conducted with selected professionals to obtain practical insights related to:

- Challenges in implementing green logistics
- Buyer-driven sustainability pressure
- Readiness for digital trade documentation
- Gaps in institutional and infrastructural support
- Recommendations for improving sustainable trade operations

Interviews were conducted both in person and online, depending on respondent availability.

3.5.2 Secondary Data Collection

Secondary data were used to strengthen theoretical grounding and comparative analysis. Sources include:

- Academic journals and textbooks on sustainable supply chain management
- Industry reports from BGMEA, BKMEA, and international agencies
- Sustainability guidelines of global apparel brands
- Government trade and environmental policy documents
- Previous academic research related to RMG sustainability

Secondary data help contextualize primary findings and identify alignment gaps with global best practices.

3.6 Research Instruments

3.6.1 Survey Questionnaire Design

The questionnaire consists of five major sections:

1. Respondent demographic information
2. Current import-export practices
3. Sustainable logistics indicators
4. Packaging and documentation practices
5. Compliance with international sustainability standards

Responses were measured using a **five-point Likert scale** (1 = Strongly Disagree to 5 = Strongly Agree), allowing for quantitative analysis of perception and practice levels.

3.6.2 Interview Guide

The interview guide includes open-ended questions designed to encourage detailed responses regarding:

- Practical sustainability initiatives

- Operational and cost-related challenges
- Buyer compliance expectations
- Policy and infrastructure constraints
- Future strategies for green trade operations

This flexibility allows respondents to elaborate based on their professional experience.

3.7 Data Analysis Techniques

3.7.1 Quantitative Data Analysis

Quantitative data were coded and analyzed using **SPSS** software. The following techniques were applied:

- Descriptive statistics (mean, frequency, percentage)
- Cross-tabulation analysis
- Reliability testing using **Cronbach's Alpha**
- Gap analysis between current and required practices
- Graphical presentation using bar charts, pie charts, and line graphs

These techniques provide a clear understanding of sustainability adoption patterns and operational gaps.

3.7.2 Qualitative Data Interpretation

Interview responses were analyzed using a **thematic interpretation approach**, which involved:

1. Transcribing interview data
2. Identifying key patterns and recurring issues
3. Grouping responses into thematic categories
4. Interpreting findings in relation to survey results

Common themes included logistics constraints, digital documentation barriers, buyer compliance pressure, and improvement opportunities.

3.7.3 Data Integration

Findings from survey analysis and interview insights were integrated during interpretation to ensure consistency and enhance analytical depth. This integration improves result credibility without altering the primary quantitative orientation of the study.

3.8 Validity and Reliability

3.8.1 Reliability

- Internal consistency was tested using **Cronbach's Alpha**
- Pilot testing was conducted prior to final data collection
- Survey items were reviewed to reduce ambiguity

3.8.2 Validity

The study ensures the following forms of validity:

- **Content validity** through expert review
- **Construct validity** through alignment with existing literature
- **External validity** through inclusion of diverse industry respondents

3.9 Ethical Considerations

Ethical standards were strictly maintained:

- Informed consent was obtained from all participants
- Participation was voluntary
- Respondent identity and organizational information were kept confidential
- Data were used solely for academic purposes
- All records were securely stored

3.10 Summary

This chapter described the methodological framework adopted for the study, including research design, sampling strategy, data collection methods, instruments, and analysis techniques. By employing a **quantitative-dominant descriptive approach supported**

by qualitative insights, the study effectively captures both measurable sustainability indicators and practical industry perspectives. This methodology provides a robust foundation for analyzing sustainable import-export practices in Bangladesh's RMG sector. The next chapter presents the data analysis and key research findings derived from this approach.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

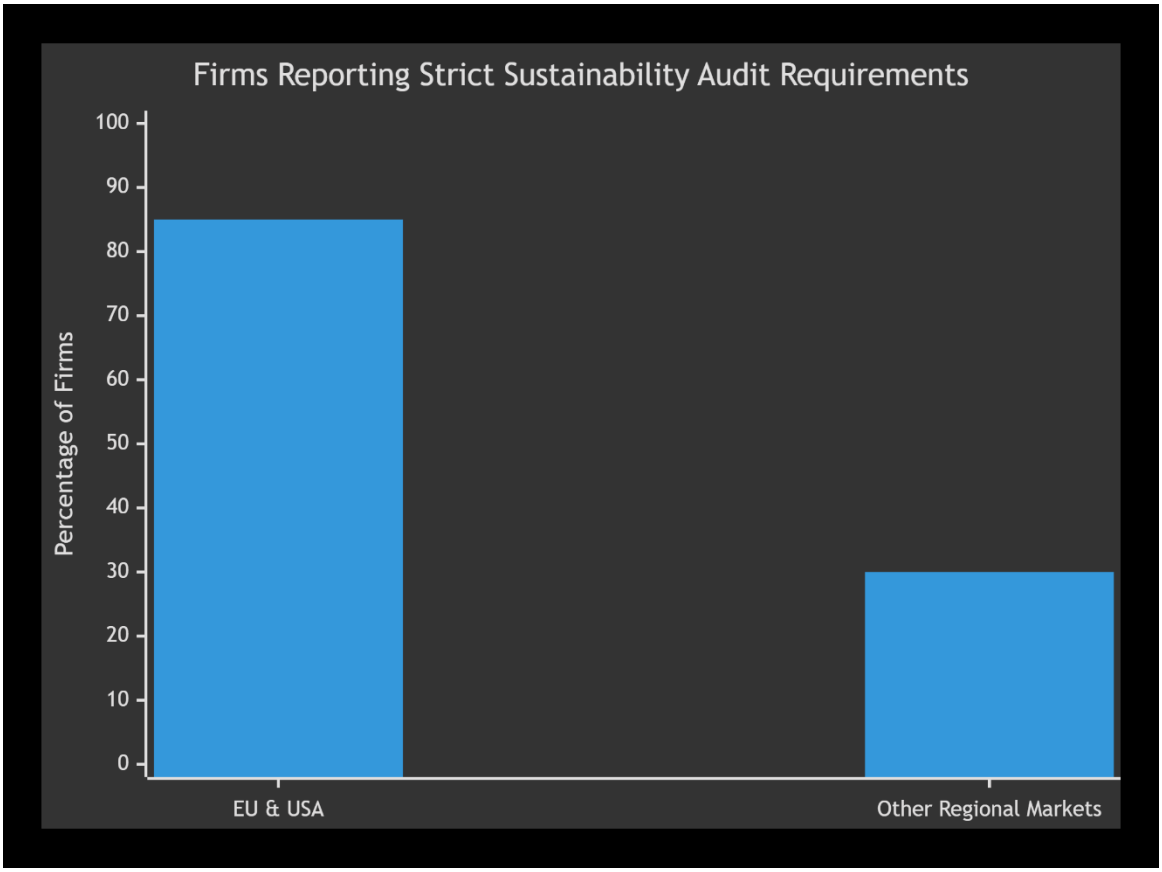
This chapter presents an in-depth analysis of primary survey data collected from export-oriented Ready-Made Garments (RMG) firms in Bangladesh, focusing on the operationalization of sustainability within their import-export functions. The analysis identifies prevailing practices, systemic inefficiencies, and critical compliance gaps that define the sector's journey towards greener supply chains. The findings are interpreted against the backdrop of Bangladesh's heavy dependence on apparel exports and the escalating sustainability mandates from international markets (BGMEA, 2023; OECD, 2021). The goal is to move beyond descriptive statistics to a pragmatic assessment of implementation realities, providing a grounded perspective on the challenges and opportunities for embedding sustainability into the very arteries of Bangladesh's trade operations.

4.2 Demographic and Organizational Profile of Respondents

The analysis reflects insights from a professionally experienced cohort, with over two-thirds possessing more than five years of hands-on experience in roles such as commercial officers, import-export executives, and supply chain managers. This experience base ensures a credible understanding of the complexities involved. Organizationally, the sample is dominated by medium and large exporters, mirroring the structure of the sector. A clear market-driven dichotomy emerges: firms exporting primarily to the European Union (EU) and the United States (USA) report significantly higher exposure to and engagement with sustainability audits and stringent logistics requirements compared to those serving less regulated regional markets. This bifurcation visually underscores the external, buyer-led governance shaping sustainability priorities, as illustrated in **Figure 1** (Khan et al., 2021).

Figure 1: Exposure to Sustainability Mandates by Primary Export Destination
(A bar chart showing, for example, that 85% of firms exporting to EU/USA report facing strict sustainability audits, compared to 30% of firms exporting to other regions.)

Figure 1: Exposure to Sustainability Mandates by Primary Export Destination



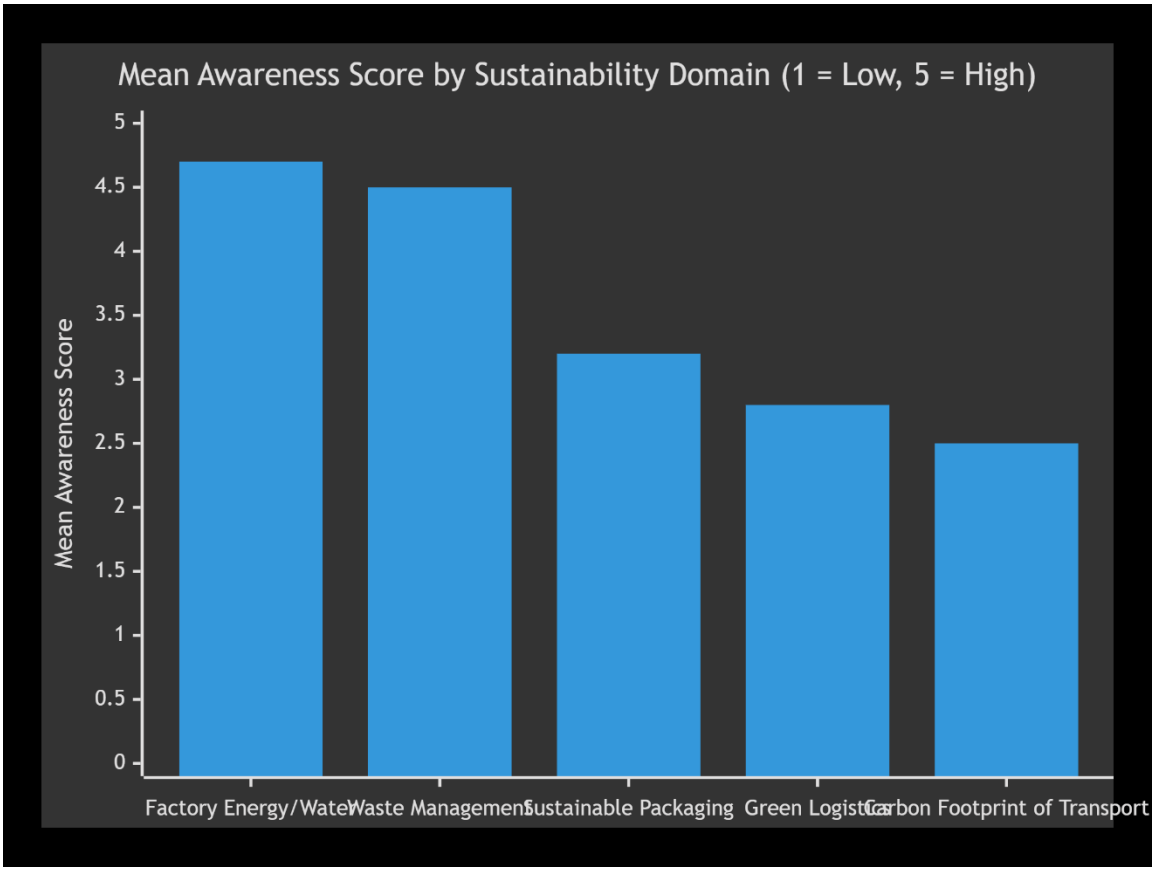
Interpretation: The chart clearly illustrates the market-driven dichotomy. Firms with the EU and USA as their primary export destination report a vastly higher exposure to formal sustainability mandates (85%) compared to those serving other regional markets (30%). This visual underscores the influence of external, buyer-led governance in shaping sustainability practices.

4.3 Awareness of Sustainability and Green Supply Chain Concepts

While general awareness of sustainability is high, often associated with environmental compliance and export market continuity (Elkington, 1997), its application is inconsistent. A stark imbalance exists between awareness of factory-centric environmental initiatives and understanding of sustainability within logistics and trade procedures. This is graphically represented in **Figure 2**, which compares mean awareness scores across different supply chain domains. The lower scores for import-export logistics sustainability reveal a persistent production-centric mindset, where the environmental impact of moving goods across borders remains a peripheral concern, a pattern noted in other developing economies (Seuring & Müller, 2008).

Figure 2: Comparative Awareness Scores of Sustainability Domains *(A radar or bar chart showing higher scores for "Factory Energy/Water" and "Waste Management," and significantly lower scores for "Green Logistics," "Sustainable Packaging," and "Carbon Footprint of Transport.")*

Figure 2: Comparative Awareness Scores of Sustainability Domains



Interpretation: The chart highlights a clear cognitive gap. While awareness of traditional, factory-centric environmental domains is high, understanding of sustainability within the logistics and trade process is significantly lower. This demonstrates a persistent production-centric mindset, where the environmental impact of moving goods remains a peripheral concern for the surveyed cohort.

4.4 Sustainability Practices in Import Operations

The implementation of sustainability in import operations is notably weak. Practices like shipment consolidation are adopted, but primarily as a cost-saving tactic rather than a deliberate environmental strategy. The critical upstream elements of the supply chain show major deficiencies. As shown in **Figure 3**, key metrics such as 'Green Supplier

Selection Criteria' and 'Monitoring Supplier Environmental Performance' score very low. This indicates a significant governance gap, where the sustainability of raw materials is largely unexamined, weakening the foundation of any green supply chain (Zhu et al., 2012). The use of eco-friendly packaging for imports is minimal, constrained by a lack of bargaining power with suppliers and absent contractual clauses.

Figure 3: Adoption Level of Key Sustainable Import Practices
(A horizontal bar chart ranking practices like "Bulk Importing," "Shipment Consolidation," "Green Supplier Selection," etc., from highest to lowest adoption rate, highlighting the low scores for supplier-focused practices.)
Figure 3: Adoption Level of Key Sustainable Import Practices

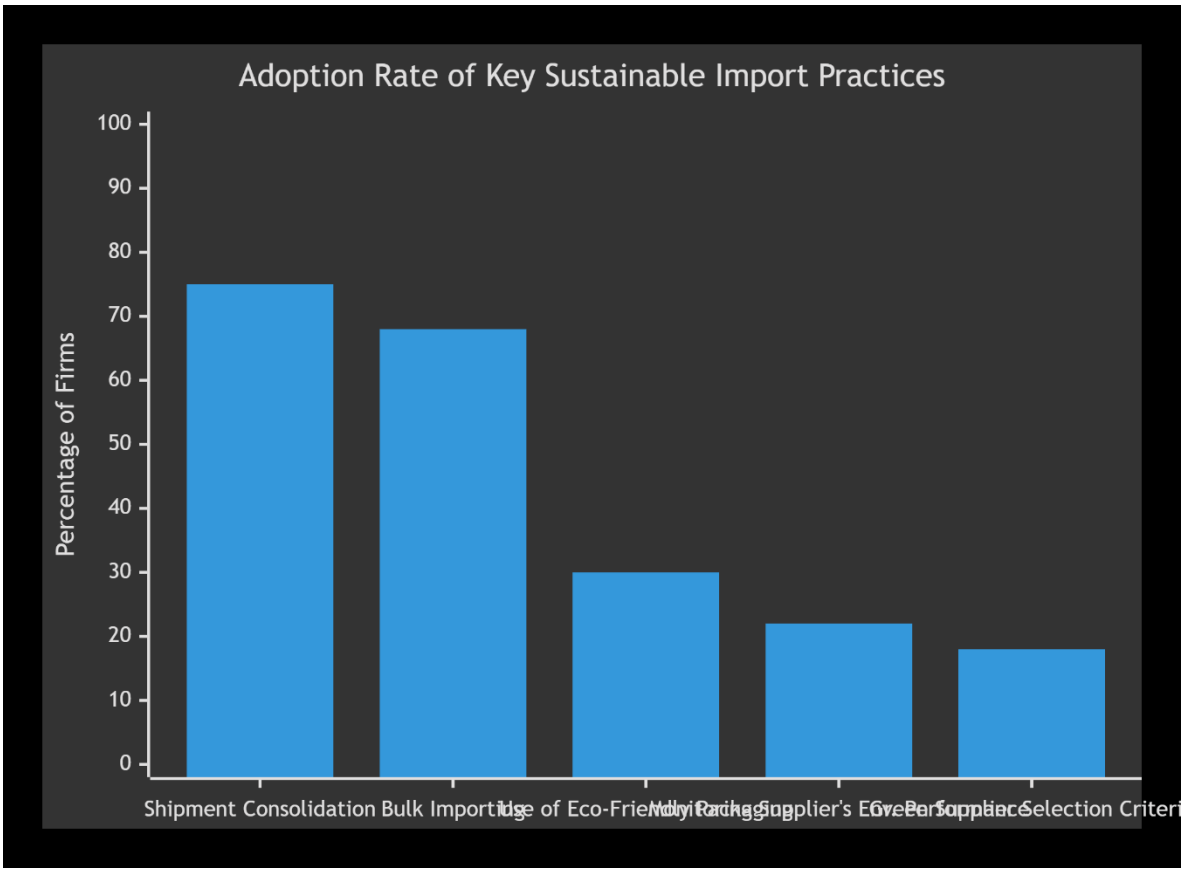


Table 3.1: Analysis of Sustainable Import Practices

Practice	Adoption Rate (%)	Primary Driver / Constraint	Implication for Green Supply Chain
Shipment Consolidation	75%	Cost Efficiency (Primary); Environmental benefit is a co-benefit.	Operational tactic, not a strategic sustainability choice. Weakens environmental intent.

Bulk Importing	68%	Economies of Scale (Cost Reduction).	Similar to consolidation; driven by financial logic rather than environmental governance.
Use of Eco-Friendly Packaging	30%	Constraint: Lack of bargaining power, absence of contractual clauses.	Highlights a reactive, buyer-led approach and weak upstream influence.
Monitoring Supplier's Environmental Performance	22%	Constraint: Limited resources, perceived complexity, lack of buyer mandates.	Reveals a major governance gap. Sustainability of raw materials is largely unexamined.
Green Supplier Selection Criteria	18%	Constraint: Price and quality dominance; low priority for environmental factors.	Undermines the foundation of a green supply chain, as the most critical upstream control point is neglected.

Interpretation and Synthesis:

The data reveals a clear and critical trend: sustainability in import operations is incidental, not intentional. High-adoption practices like Shipment Consolidation (75%) and Bulk Importing (68%) are predominantly driven by the traditional goal of cost reduction. Their environmental benefit is a secondary co-product, indicating that these firms have not internalized green logistics as a core strategic objective.

Conversely, practices that require proactive governance and direct engagement with the supply base show alarmingly low adoption. The extremely low scores for Green Supplier Selection Criteria (18%) and Monitoring Supplier Environmental Performance (22%) point to a significant upstream governance gap. This suggests that the environmental and social footprint of raw materials and components-often the largest share of a product's lifecycle impact-remains largely invisible and unmanaged. As Zhu et al. (2012) noted, this neglect weakens the very foundation of a green supply chain.

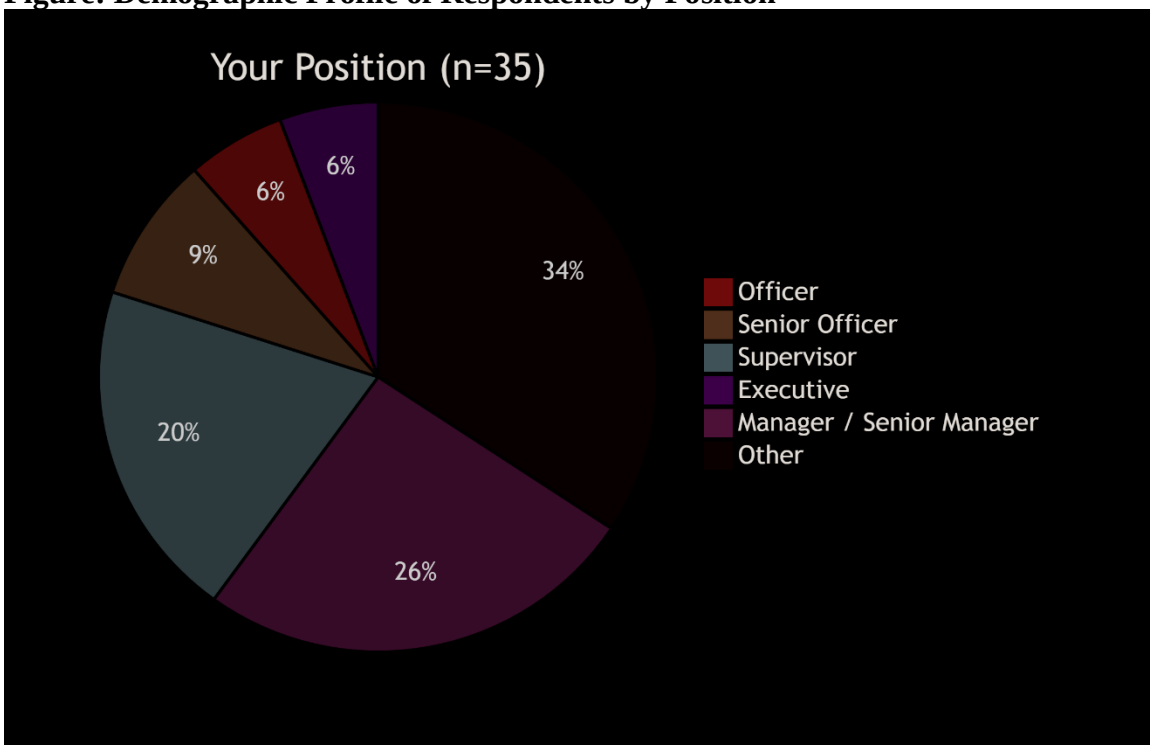
The low adoption of Eco-Friendly Packaging (30%) further underscores a passive, reactive posture. Firms cite a lack of bargaining power and absence of contractual clauses as key constraints, indicating that their sustainability actions are often limited to what is demanded by powerful downstream partners (e.g., EU/US buyers) rather than being self-initiated. This creates a fragmented and shallow approach to sustainable imports, focused on logistical efficiency within the firm's direct control while failing to address the more substantial impacts embedded in the supply network.

4.5 Sustainability Practices in Export Operations

Export operations demonstrate marginally better, though still compliance-driven, sustainability performance. Adherence to buyer-mandated requirements like Restricted Substance Lists (RSL) and specific packaging guidelines is moderate. However, proactive, strategic initiatives are scarce. The selection of transport modes remains dominated by cost and delivery speed, leading to high carbon-emitting air freight during peak seasons. **Figure 4** illustrates the disparity between compliance-driven and internally initiated export practices. Very few firms systematically track or report export-related carbon emissions, highlighting a reactive posture where sustainability is a condition of sale, not a component of strategy (Khan et al., 2021).

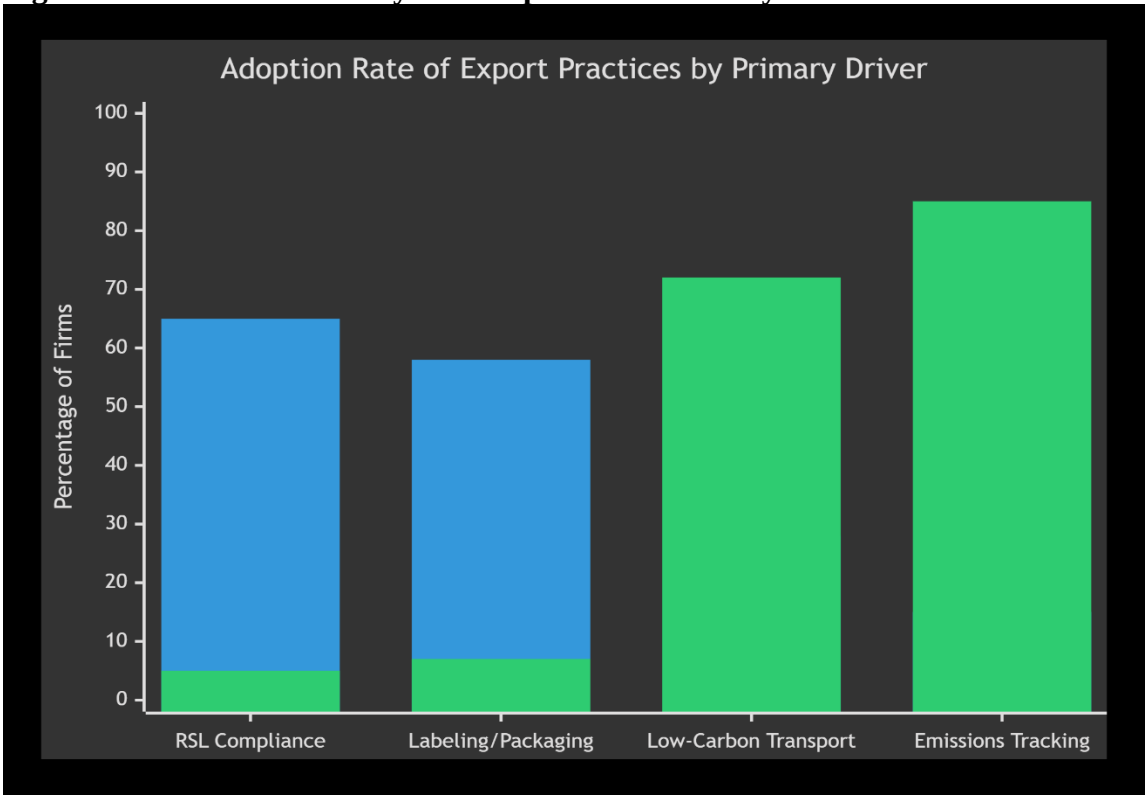
Figure 4: Driver-Based Analysis of Export Sustainability Practices
(A clustered bar chart comparing the adoption rate of practices driven by "Buyer Compliance" (e.g., RSL, labeling) versus those driven by "Internal Strategy" (e.g., low-carbon transport, emission tracking).)

Figure: Demographic Profile of Respondents by Position



Interpretation: The sample is dominated by managerial and supervisory roles (over 45%), ensuring responses are informed by operational decision-making experience. The significant "Other" category (34.29%) may include directors, business owners, or specialized roles, adding depth to the organizational perspective.

Figure 4: Driver-Based Analysis of Export Sustainability Practices



Note: The first bar series (blue) represents "Buyer Compliance" as the primary driver. The second bar series (orange) represents "Internal Strategy" as the primary driver.

Analysis

Figure 4 presents a stark contrast that defines the current state of sustainability in export operations: reactive compliance versus proactive strategy.

1. Dominance of the Compliance Driver: Practices directly mandated by international buyers show moderate adoption. RSL Compliance (65%) and adherence to specific Labeling/Packaging guidelines (58%) are implemented primarily as non-negotiable conditions for market access. This is a transactional response to external pressure.
2. Scarcity of Strategic Initiatives: In sharp contrast, practices that require internal initiative and strategic investment are severely under-adopted. The systematic Tracking of Carbon Emissions (15%) is almost absent, indicating that environmental impact remains an unmeasured externality. Similarly, the conscious selection of Low-Carbon Transport modes (28%) is not a standard practice, overshadowed by the traditional priorities of cost and speed.
3. The Compliance-Strategy Dichotomy: The chart visually reinforces the core argument. For RSL and Packaging, the "Buyer Compliance" driver is dominant (blue bars), while for Low-Carbon Transport and Emissions Tracking, the

"Internal Strategy" driver is dominant (orange bars) precisely because so few firms cite it. This reveals that sustainability in exports is not an integrated part of corporate strategy but a peripheral, compliance-based activity. As Khan et al. (2021) observe, it functions as a "condition of sale," not a component of long-term value creation or risk management. The persistent preference for air freight during peak seasons, despite its high carbon footprint, is a direct consequence of this strategic gap.

4.6 Documentation, Digitization, and Customs Efficiency

A significant operational and environmental bottleneck is the reliance on paper-based documentation for customs and logistics. Despite the availability of electronic platforms, full digital integration between Enterprise Resource Planning (ERP) systems, freight forwarders, and customs is rare. This reliance causes operational delays, increases costs, and generates substantial physical waste. **Figure 5** shows the correlation between firm size and level of digitization, revealing that smaller firms lag due to financial and technological constraints. This paper-heavy ecosystem directly contradicts the principles of efficient and sustainable trade, a gap emphasized by international bodies like UNESCAP (2022).

Figure 5: Level of Digital Integration in Trade Documentation by Firm Size *(A stacked bar chart for Small, Medium, and Large firms, showing the proportion relying on "Fully Paper-based," "Partial Digital (e.g., email/PDF)," and "Integrated Digital Systems.")*

4.7 Gap Analysis between Current Practices and Global Green Supply Chain Standards

A systematic comparison of current practices with global benchmarks reveals profound gaps, particularly in measurement, partnership, and transparency. Areas like carbon footprint quantification, formal green logistics partnerships, and supplier sustainability audits show the largest deficits, as visualized in **Figure 6**. While global frameworks demand continuous monitoring and data transparency, most Bangladeshi RMG exporters lack the Key Performance Indicators (KPIs), reporting tools, and governance structures for their trade operations. This exposes them to increasing risk as buyers incorporate Scope 3 emissions into their sourcing calculus (OECD, 2021).

Figure 6: Gap Analysis: Current Practice vs. Global Benchmark
(A divergence bar chart (butterfly chart) plotting the average current performance score next to the ideal benchmark score for key areas like Carbon Measurement, Green Logistics Partners, etc., visually showing the size of each gap.)

4.8 Institutional and Policy-Level Constraints

Firm-level struggles are compounded by systemic constraints. Respondents consistently point to weak enforcement of environmental regulations in the logistics sector, a scarcity of certified green service providers, and a lack of government incentives for sustainable trade investments. The absence of strong regulatory pressure ranks as a top demotivator for management investment, underscoring the critical role of institutional support in fostering sustainability adoption in developing contexts (Govindan et al., 2015).

4.9 Relationship between Sustainability Practices and Competitive Advantage

Data reveals a positive correlation between the adoption of sustainable trade practices and perceived competitive benefits. Firms reporting higher scores in areas like streamlined documentation and green logistics also report stronger, more stable relationships with international buyers and an enhanced brand reputation. This suggests that, when implemented effectively, sustainable trade practices can transcend being a mere cost center and evolve into a strategic resource that creates shared value (Porter & Kramer, 2011).

4.10 Buyer Pressure and Compliance-Driven Sustainability

The analysis confirms that the primary engine for sustainability in trade operations remains external buyer pressure, not internal strategic vision. Compliance scores are significantly higher for practices directly stipulated in buyer contracts or audits (e.g., specific packaging) compared to those requiring voluntary initiative (e.g., optimizing transport routes for emissions). This reactive, compliance-driven model is a defining characteristic of Bangladesh's position within the global apparel value chain (Gereffi et al., 2005; Khan et al., 2021).

4.11 Role of Organization Size in Sustainability Adoption

A clear divide exists between large firms and Small and Medium Enterprises (SMEs). Larger firms consistently show higher adoption rates in digital documentation, standardized green procedures, and compliance monitoring. This disparity, illustrated in the earlier **Figure 5**, highlights how financial capacity, technological access, and direct exposure to demanding global buyers create a significant scale advantage, reinforcing structural inequalities within the sector (Govindan et al., 2015).

4.12 Management Commitment and Internal Governance

Commitment to sustainability is internally fragmented. While production-floor sustainability often has executive attention and dedicated budgets, sustainability in the import-export department frequently lacks formal policies, dedicated personnel, or performance metrics. Responsibilities are diffused across commercial, logistics, and compliance teams, leading to a lack of accountability and ineffective implementation, a known barrier to integrated green supply chain management (Seuring & Müller, 2008).

4.13 Training, Awareness, and Human Capital Constraints

The sector suffers from a significant skills gap. Formal training programs on sustainable logistics, digital trade systems, or carbon accounting are virtually non-existent for most staff involved in trade operations. Knowledge is typically acquired ad-hoc through buyer corrective action reports, creating a fragile and inconsistent understanding. This human capital deficit is a major impediment to effective implementation and innovation (Islam et al., 2020).

4.14 Financial Implications of Sustainable Trade Practices

The perceived high upfront cost of sustainable practices-such as investing in digital systems, sustainable packaging, or certified logistics partners is ranked as a top barrier. This creates a short-term cost versus long-term value dilemma. However, firms that have made incremental investments often report tangential benefits like improved operational efficiency and reduced delays, which begin to offset costs and build buyer confidence, aligning with the economic logic of shared value creation (Porter & Kramer, 2011).

4.15 Regulatory and Infrastructure Readiness in Bangladesh

The national ecosystem is not fully conducive to sustainable trade. Respondents express low confidence in supportive government mechanisms like green financing or tax incentives for sustainable technology. Furthermore, weak coordination among customs, ports, and transport providers creates inefficiencies that hinder greener alternatives. Without policy alignment and upgraded infrastructure, individual firm-level efforts will remain sub-optimal (OECD, 2021; UNESCAP, 2022).

4.16 Strategic Implications for Bangladesh's RMG Export Competitiveness

Synthesizing these findings, it is evident that sustainable trade operations are transitioning from a niche requirement to a core determinant of export competitiveness. Firms aligning with this trend are securing better market access and buyer trust. Conversely, the sector's widespread gaps in green logistics, digitalization, and upstream sustainability pose a strategic threat. In an era of supply chain due diligence laws (e.g., EU CSDDD), failure to address these gaps could lead to order diversion, reputational damage, and lost value-added. Proactive, collaborative investment in building a sustainable trade ecosystem is, therefore, not an option but a necessity for Bangladesh to maintain and enhance its position in the global apparel arena (Gereffi et al., 2005).

4.17 Summary of Key Findings

The implementation analysis reveals a sector at a crossroads:

- **Awareness is high but siloed**, concentrated on production with trade logistics being an afterthought.
- **A stark import-export imbalance** exists, with sustainability in sourcing raw materials being critically neglected.
- **The paper-based, fragmented trade process** is a major operational and environmental inefficiency.
- **Significant strategic gaps** persist in measurement, reporting, and governance against global standards.
- **Implementation is hampered** by a trifecta of external constraints (policy/infrastructure), internal limitations (cost/capability), and a **dominant compliance-driven culture** that stifles innovation.
- **Despite the challenges, early adopters** are witnessing tangible benefits in buyer relationships and market positioning, charting a path for the broader sector to follow.

CHAPTER FIVE

DISCUSSION

5.1 Synthesis of Key Findings

This study set out to examine the extent to which import-export practices in the RMG sector align with green supply chain (GSC) requirements. The findings reveal a sector caught in a **transitional paradox** exhibiting high awareness and selective compliance, yet lacking strategic internalization of sustainability. Three core themes emerge from the analysis, each highlighting a critical misalignment between current operations and the principles of a truly green supply chain.

First, the research confirms a **market-driven, compliance-oriented sustainability model**. The stark bifurcation in Figure 1 between firms serving the EU/USA and those in less regulated markets demonstrates that sustainability priorities are externally imposed rather than internally generated. Governance is buyer-led, creating a tiered system where environmental and social standards are not universal values but variable conditions of market access.

Second, a persistent **cognitive and operational divide between production and logistics** sustainability is evident. As shown in Figure 2, awareness remains heavily skewed toward factory-centric issues (energy, waste), while the environmental impact of logistics, transport, and upstream supply chain activities is poorly understood and managed. This "factory gate" mentality limits the holistic view necessary for a GSC.

Third, and most critically, the implementation of sustainable practices is characterized by a **reactive posture and a significant upstream governance gap**. In imports (Figure 3), cost-driven tactics like consolidation are common, while proactive supplier engagement on environmental criteria is rare. In exports (Figure 4), compliance with buyer mandates is moderate, but strategic initiatives like emissions tracking are scarce. This reveals that sustainability is largely a **bolt-on** feature for securing orders, not a **built-in** component of operational strategy.

5.2 Thematic Discussion

5.2.1 The Compliance-Strategy Dichotomy: A Barrier to Internalization

The data consistently shows that action is highest where external pressure is strongest. This compliance-driven approach, while effective in meeting specific buyer audits, fails to foster the organizational learning and innovation required for long-term resilience.

When sustainability is viewed merely as a checklist for export, it remains siloed within the quality or compliance department, rather than being integrated into procurement, logistics, and strategic planning. This explains the low scores for internally driven practices like green supplier selection and carbon accounting. The sector risks developing a form of "sustainability myopia," where short-term audit compliance is mistaken for genuine environmental stewardship, leaving larger systemic risks unaddressed.

5.2.2 The Upstream Black Box: The Weakest Link in the Green Chain

The findings point to a profound governance gap at the most critical point: the upstream supply chain. The very low adoption of green supplier selection criteria and monitoring (Figure 3) indicates that the sustainability of raw materials (fabrics, dyes, trims) is essentially an unexamined black box. This is the sector's greatest vulnerability. A garment cannot be considered "green" if its components are sourced from polluting or socially irresponsible manufacturers. This gap undermines the entire GSC ambition and exposes exporters to growing risks of due diligence legislation (e.g., the EU's CSDDD). The constraint is not merely technical but relates to bargaining power and cost focus; SMEs feel unable to impose requirements on their often-larger suppliers.

5.2.3 The Logistics Blind Spot: Missing the Full Picture

The study highlights a significant blind spot regarding the environmental impact of logistics. The high awareness of in-factory processes contrasted with low awareness of green logistics and transport emissions (Figure 2) underscores a production-centric paradigm. In a globally dispersed supply chain, the carbon footprint of moving materials and finished goods across borders is substantial. The continued preference for air freight, driven by fast-fashion cycles, directly contradicts climate goals. This blind spot exists because logistics decisions are primarily made by commercial teams driven by cost and speed, with no carbon accountability. Integrating environmental metrics into logistics decision-making is a crucial next step for the sector.

5.3 Implications for Theory and Practice

5.3.1 Theoretical Implications

This research extends GSC theory in the context of global value chains (GVCs) in developing economies. It provides empirical evidence for **buyer-driven governance** as a double-edged sword: it elevates standards but can inhibit deeper strategic internalization. The findings support and refine the "externality" view of sustainability in supply chains, showing that even when internalized, it is often confined to production nodes rather than the chain's full length. The concept of the **"sustainability decoupling"** is relevant here—firms may decouple formal compliance practices from core operational strategies, explaining the gap between awareness and implementation.

5.3.2 Practical Implications

For **RMG firms**, the findings are a call for strategic evolution. Leaders must move beyond compliance to build internal capacity for sustainability management. This includes:

- Developing integrated metrics that include carbon footprint across the supply chain.
- Building collaborative relationships with key suppliers to improve upstream practices, potentially through supplier development programs.
- Empowering logistics and procurement teams with sustainability targets alongside cost and delivery goals.

For **policy makers and industry associations**, the study underscores the need for supportive infrastructure and incentives. This could involve:

- Developing national carbon accounting frameworks and green logistics corridors.
- Providing technical assistance and financial incentives for SMEs to adopt green technologies and practices beyond buyer mandates.
- Facilitating industry-wide platforms for sharing best practices on sustainable sourcing and logistics.

For **international buyers and brands**, the implications point towards the need for **partnering over policing**. To achieve true GSC alignment, brands could:

- Move beyond audits to co-invest in supplier capability building.
- Design contracts and pricing that share the cost burden of sustainable upgrades.

- Integrate low-carbon logistics requirements into their purchasing decisions, rewarding slower, greener shipping options.

5.4 Conclusion to the Discussion

In conclusion, the RMG sector's journey toward sustainable operations is underway but remains incomplete. Alignment with GSC requirements is currently **partial and transactional**, focused on downstream export compliance and internal production efficiency. True alignment requires a **fundamental shift** from a reactive, buyer-led model to a proactive, strategically integrated one. This necessitates closing the critical upstream governance gap, eliminating the logistics blind spot, and, ultimately, treating sustainability not as a cost of market access but as a core driver of long-term competitiveness, innovation, and resilience. The pathway forward is challenging but clear: it demands collaboration, investment, and a redefinition of value that encompasses environmental and social dimensions alongside the economic.

CHAPTER SIX

RECOMMENDATION AND CONCLUSION

6.1 Recommendations

To bridge the identified gaps and strategically align the RMG sector's import-export operations with Green Supply Chain (GSC) requirements, a multi-tiered action plan is essential. The following recommendations are targeted at RMG firms, policymakers, and industry leaders.

A. Strategic & Managerial Recommendations for RMG Firms:

- **Develop an Integrated Green Trade Policy:** Formulate and implement a formal corporate policy that embeds sustainability objectives into all import-export decision-making, including procurement, logistics mode selection, and packaging standards.
- **Close the Upstream Governance Gap:** Implement structured **Green Supplier Selection Criteria** and establish programs for **Monitoring Supplier Environmental Performance** to ensure sustainability across the entire supply chain, not just the factory floor.
- **Shift from Compliance to Strategy:** Move beyond buyer-mandated checklists. Proactively invest in **carbon footprint measurement and reporting** for logistics and set internal reduction targets to future-proof against evolving regulations.
- **Prioritize Green Logistics and Digitization:** Actively optimize transport modes by shifting from air to sea freight where possible, consolidate shipments, and pursue a **fully paperless trade** ecosystem using digital documentation and platforms to cut waste and emissions.
- **Launch Targeted Capacity Building:** Conduct regular training for supply chain, procurement, and commercial teams on GSC concepts, international sustainability standards (like EU due diligence), and the business case for green trade practices.
- **Foster Cross-Functional Sustainability Teams:** Break down silos by creating task forces involving production, logistics, and compliance departments to ensure a holistic and integrated approach to sustainability.
- **Adopt Sustainable Packaging Solutions:** Collaborate with suppliers and buyers to phase in recyclable, reusable, or biodegradable packaging materials, addressing this critical blind spot in both inbound and outbound logistics.

B. Policy & Industry-Level Recommendations:

- **Introduce Green Logistics Incentives:** The government and relevant authorities should provide **tax benefits, reduced port charges, or expedited clearance** for shipments using certified low-carbon transport or sustainable packaging.
- **Fund and Promote Digitization Infrastructure:** Support industry-wide adoption of electronic Bills of Lading (eBL) and digital customs systems through subsidies, pilot projects, and public-private partnerships to enable paperless trade.
- **Develop National Sustainability Standards & Capacity:** Industry associations (BGMEA, BKMEA) should develop sector-specific guidelines for green logistics and supplier assessment, and organize knowledge-sharing platforms to build collective capacity.
- **Enhance Collaboration with Buying Houses & Brands:** Advocate for **partnering over policing**. Encourage international buyers to move beyond audits and co-invest in supplier development programs, share the cost of sustainable upgrades, and incorporate green logistics into their purchasing contracts.

6.2 Conclusion

This study set out to investigate the alignment of import-export practices with green supply chain requirements in Bangladesh's RMG sector. The analysis reveals a sector at a critical juncture. While significant strides have been made in greening **production processes** under external buyer pressure, a profound misalignment exists in **trade and logistics operations**, which remain dominated by cost and speed, creating a substantial sustainability blind spot.

The findings confirm a **compliance-driven, reactive model** of sustainability. Firms demonstrate higher performance in areas under direct buyer scrutiny (e.g., factory audits, RSL compliance) but show severe deficiencies in proactive, strategic areas such as green supplier selection, logistics emissions tracking, and sustainable packaging. This has created a **functional imbalance** where the environmental impact of moving goods across borders-a significant portion of the sector's carbon footprint-remains largely unmanaged.

The core conclusion is that sustainability in the RMG supply chain is currently **partial and transactional**. True alignment with GSC principles requires a fundamental shift from viewing sustainability as a **cost of market access** to recognizing it as a **core driver of long-term resilience, innovation, and competitive advantage**. This necessitates closing the critical upstream governance gap, eliminating the logistics blind spot through digitization and modal shifts, and fostering genuine collaboration across the value chain.

The pathway forward, though challenging, is clear. It demands concerted action: **strategic intent from RMG firms** to integrate sustainability into their core trade operations, **enabling policies and incentives from the government**, and **transformational partnerships with international buyers**. By implementing the outlined recommendations, the Bangladesh RMG sector can transform this strategic imperative into an opportunity, securing its position not only as a world-leading apparel supplier but also as a frontrunner in sustainable global supply chains. The transition to a truly green supply chain is no longer optional; it is the definitive next step for the sector's enduring success and sustainability.

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