

INTERNSHIP REPORT
ON
Determinants of Export Performance of Selected Non-RMG
Firms in Bangladesh

Supervised By

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ID No: 12117055
Session: 2020-2021
Department of Finance and Banking
Comilla University



Department of Finance and Banking
Comilla University

20th April, 2026

Letter of Transmittal

20th April, 2026

Md. Al-Amin,

Assistant Professor

Department of Finance and Banking,

Comilla University, Cumilla

Subject: Submission of Research Report on "Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh."

Dear Sir,

I am pleased to submit my bachelor's research report, "Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh."

This project examines the key factors driving export revenue outside the RMG sector. Using Stata 18, I analyzed how exchange rates, marketing spending, trade incentives, product development costs, order fulfillment rates, and overall GDP impact international trade. By connecting economic theory with real data, this study highlights Bangladesh's export diversification and RFL Group's global strategies. The data was rigorously tested to ensure reliable, academically sound results.

I am deeply grateful for your continuous guidance, feedback, and support. I hope the findings and recommendations in this report prove valuable for future academic research, corporate planning, and government policy-making.

Sincerely,

Kazi Juhaer Anan Lazim

Student ID: 12117055

Session: 2020-21

Department of Finance and Banking,

Comilla University, Cumilla.

Supervisor's Declaration

This is to formally certify that the comprehensive research report titled "Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh" has been completed as a partial fulfillment of the academic requirements for the degree in Business Administration.

This report represents the culmination of authentic, original research and rigorous empirical analysis. The data processing, advanced econometric modeling, and subsequent analytical interpretations utilizing the Stata 18 statistical software package have been conducted systematically and meticulously under direct academic supervision. The study successfully and exhaustively explores the specified independent variables and their dynamic, multifaceted relationship with export revenue within the specific operational context of the RFL Group's international export division.

The student has demonstrated a commendable understanding of panel data econometrics, correctly identifying the nuances between cross-sectional time-series data and standard time-series models. The diagnostic procedures, including tests for multicollinearity, heteroskedasticity, and autocorrelation, followed by the application of the Hausman specification test to determine the appropriateness of the Fixed Effects model, were executed with a high degree of precision. This document thoroughly meets the required academic standards for formal submission, evaluation, and grading.

This report has been prepared under my supervision and is a result of authentic work carried out successfully.

Signature: _____

Md. Al-Amin

Assistant Professor

Department of Finance and Banking,

Comilla University, Cumilla.

Student's Declaration

I hereby solemnly declare that the research report titled "Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh" is the direct outcome of my independent academic investigation, literature synthesis, and empirical data analysis. The quantitative data utilized in this study, specifically including the "RFL Export" observation dataset, has been processed, tested, and analyzed using the Stata 18 statistical software package specifically for the fulfillment of this academic project.

I further declare that the econometric interpretations, strategic formulations, and organizational analyses presented in this document represent my original work, conducted under the guidance of my academic supervisor. This document has not been submitted, in whole or in part, to any other educational institution, university, or corporate entity for the award of any degree, diploma, fellowship, or commercial publication.

All secondary literature, academic journals, institutional working papers, and corporate reports referenced within this study have been appropriately cited within the text to ensure strict adherence to academic integrity and to explicitly avoid any form of plagiarism. The utilization of prior structural templates has been adapted strictly to conform to the requirements of panel data analysis, ensuring the originality of the methodological application.

Signature: _____

Kazi Juhaer Anan Lazim

Student ID: 12117055

Session: 2020-21

Department of Finance and Banking .

Comilla University, Cumilla.

Acknowledgement

I am profoundly grateful to Almighty Allah for providing the requisite strength, perseverance, and intellectual capacity to successfully culminate this comprehensive research report titled "Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh."

I am truly grateful to everyone who helped me complete this research. I want to especially thank my supervisor for their constant support and expert advice. His guidance and feedback were essential in making this study successful and accurate.

Special and sincere appreciation is extended to Salauddin Sarkar Sir, GM, RFL-Export and the export division personnel of RFL Group for providing the foundational operational context and the vital observation data that inspired and fueled the variables utilized in this empirical analysis. Without the practical context of one of Bangladesh's premier manufacturing conglomerates, this academic initiative would lack its essential real-world applicability.

Furthermore, immense gratitude is owed to the esteemed faculty members of the Department of Finance & Banking for laying the comprehensive theoretical and conceptual groundwork over the years that made this advanced empirical investigation possible.

Finally, heartfelt thanks are reserved for family members and academic peers, whose constant moral support, patience, and highly constructive intellectual discussions significantly contributed to the successful and timely culmination of this extensive research initiative.

Internship Appointment Letter



PRAN-RFL GROUP
Since 1981



Date: 16-Jan-26

Mr. Kazi Juhaer Anan Lazim
S/O: Kazi Humayun Kabir
Address: East Shilua, Feni

Staff ID: 573739

INTERNSHIP OFFER LETTER

Dear, Mr. Kazi Juhaer Anan Lazim

We are pleased to inform you that, RFL Group has confirmed your acceptance of an internship in the **RFL-Export Sales-RIP-Factory**. You will be paid Taka **15,000.00 (Fifteen Thousand Taka Only)** per month as an internship allowance and your internship will begin on **16-Jan-26** and end on **16-Apr-26**. Your duties and assignments for this position will be supervised by **Manager-Export**.

However, your internship with RFL Group is "at-will", which means that either you or the company may terminate your internship at any time with one week prior notice.

During your internship you will be provided with temporary ID-Card having access to all floors and you may enjoy subsidized lunch during your tenure.

I hope that your association with the company will be successful and rewarding. Please indicate your acceptance of this offer by signing below and returning it to RFL-HR at your earliest convenience.

We look forward to welcoming you to RFL Group.
Please let us know if you have any query.

Sincerely,

Head of- HRM, RFL- Group

I accept Internship in RFL- Group on the terms and conditions set out in the internship policy

Kazi Juhaer Anan Lazim
Name

Signature

15-01-26
Date

To Whom May Concern

This is to formally state that I, Kazi Juhaer Anan Lazim, have successfully completed my internship at RFL Group in the Export department. My internship period began on 16-Jan-26 and concluded on 16-Apr-26.

As of the date of this submission, the official internship completion certificate is still under process by the HR department. To verify my employment and the terms of my engagement, I have attached my original Internship Appointment Letter to this document.

During my tenure, I was involved in order management, buyer hunt and analyzing export performance data. This document serves as a placeholder until the formal certificate is issued.

Sincerely,

Signature: _____

Kazi Juhaer Anan Lazim

Student ID: 12117055

Session: 2020-21

Department of Finance and Banking .

Comilla University, Cumilla.

Certificate of Anti-Plagiarism

It is certified that the Internship Report titled Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh submitted by Kazi Juhaer Anan Lazim (ID No.12117055) of the Department of Finance and Banking, Comilla University has been examined with the anti-plagiarism tool.

I undertake that:

1. The report has significant new work/knowledge as compared to those already published or are under consideration to be published elsewhere. No sentence, equation, diagram, table, paragraph or section has been copied verbatim from previous work unless it is placed under quotation mark and duly referenced.
2. The work presented is original and own work of the author i.e. there is no plagiarism. No ideas, processes, results or words of others have been presented as the author's own work.
3. There is no fabrication of data or results which have been compiled and analyzed.
4. There is no falsification by manipulating research materials, equipment or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

N.B. Plagiarism Checker Report received from the Department of Finance and Banking, Comilla University is also enclosed along with this Summary of Results.

Date:

Place: Cumilla

Kazi Juhaer Anan Lazim

Student ID: 12117055

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Department of Finance and Banking,

Comilla University, Cumilla.

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Executive Summary

This report examines Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh. The study is conducted using panel data collected from four non-rmg company over a fifteen-year period from 2011 to 2025. The main objective of the study is to analyze how key factors, including Exchange Rate (EXR), Marketing Expenditure (ME), Trade Incentives (TI), Product Development Expenditure (PDE), Order Fulfillment Rate (OFR), and GDP Rate (GDP), influence export performance, measured by Export Revenue (ER).

Over the last thirty years, Bangladesh has maintained a trajectory of significant macroeconomic development, largely driven by the remarkable expansion of the Ready-Made Garments (RMG) industry. As the primary contributor to the country's export revenue, the RMG sector has successfully embedded millions into global trade networks. Nevertheless, this disproportionate dependence on a single sector introduces substantial risks related to structural economic concentration. Consequently, fostering the growth of non-RMG industries has shifted from a secondary goal to a vital strategic necessity for ensuring long-term economic stability, especially as Bangladesh approaches its transition out of Least Developed Country (LDC) status.

This research exhaustively investigates the "Determinants of Export Performance of Selected Non-RMG Firms in Bangladesh," utilizing detailed panel data derived from the export operations of the RFL Group. As a premier conglomerate operating in the plastics, electrical electronics, and consumer goods industries, RFL Group serves as an optimal empirical proxy for the broader non-RMG manufacturing sector. The core objective of this study is to empirically quantify the precise impact of six independent variables Exchange Rate, Marketing Expenditure, Trade Incentives, Product Development Expenditure, Order Fulfillment Rate, and GDP Rate on the dependent variable, Export Revenue.

The methodological framework of this study is anchored in quantitative panel data econometrics. A balanced panel dataset consisting of 60 discrete observations was rigorously processed and analyzed using Stata 18. The analytical progression incorporated descriptive statistics to understand variable distributions, correlation matrices to identify initial bivariate relationships,

and Variance Inflation Factor (VIF) assessments to rule out severe multicollinearity. Furthermore, the dataset was subjected to the Breusch-Pagan test for heteroskedasticity and the Wooldridge test for panel autocorrelation.

Diagnostic testing revealed a mean VIF of 2.28, confirming the absence of problematic multicollinearity, and the Breusch-Pagan test confirmed homoskedasticity. However, the Wooldridge test detected the presence of first-order autocorrelation within the panel data. Consequently, both Feasible Generalized Least Squares (FGLS) and Fixed Effects (FE) regressions were estimated to ensure robustness. The Hausman specification test yielded a p-value of 0.036, definitively confirming that the Fixed Effects model was the most robust and statistically appropriate estimator for this specific panel dataset, as it effectively controls for unobserved time-invariant heterogeneity among the cross-sectional units.

Fixed Effects regression results reveal that the Exchange Rate and Product Development Expenditure significantly and positively influence Export Revenue. These findings confirm that currency depreciation enhances price competitiveness and that R&D investment secures global market share. In contrast, Marketing Expenditure showed a significant negative contemporaneous link with revenue, likely due to lagged returns or defensive spending during periods of volatility in B2B non-RMG export channels.

Overall, Trade Incentives, while highly significant in pooled and FGLS estimations, completely lost their statistical significance in the Fixed Effects model. This provides a profound econometric revelation: because government trade incentives are highly static and lack sufficient within-group temporal variation over the observed periods, they do not act as dynamic drivers of short-term firm-level revenue fluctuations, despite their overarching importance to the sector. Both the Order Fulfillment Rate and the overall GDP rate were found to be statistically insignificant within the highly specific context of this dataset. The report concludes with detailed strategic recommendations directed at both the corporate management of RFL Group and macro-level policymakers, heavily emphasizing the prioritization of continuous product innovation and proactive exchange rate risk management to secure sustainable, long-term export diversification.

Acronym

The table below outlines the primary acronyms utilized throughout this comprehensive research document to ensure clarity and consistency for the reader.

Acronym	Full Meaning
AIC	Akaike Information Criterion
B2B	Business-to-Business
BIC	Bayesian Information Criterion
DV	Dependent Variable
EPZ	Export Processing Zone
ETP	Effluent Treatment Plant
FE	Fixed Effects
FGLS	Feasible Generalized Least Squares
GDP	Gross Domestic Product
GVC	Global Value Chain
IV	Independent Variable
LDC	Least Developed Country
OLS	Ordinary Least Squares
PRAN	Program for Rural Advancement Nationally
R&D	Research and Development
RE	Random Effects
RFL	Rangpur Foundry Limited
RMG	Ready-Made Garments
SCM	Supply Chain Management
VIF	Variance Inflation Factor

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Chapter 1: Introduction

1.1 Introduction

A strong economy needs a mix of different exports to succeed in the global market. For developing nations, growing exports is the fastest way to build industries and reduce poverty. Bangladesh is often cited in economic studies for the "Bangladesh Paradox"—achieving high economic growth despite major infrastructure challenges (Asadullah, Savoia and Mahmud, 2014). This success is mostly driven by the Ready-Made Garments (RMG) sector, which brings in most of the country's foreign income.

However, relying on just one industry is risky. If global demand drops or trade rules change, an unmixed export basket leaves the whole economy vulnerable (Haque and Taslim, 2011). To keep the economy stable, Bangladesh must grow non-RMG export sectors, such as plastics, agriculture, and electronics. To achieve this, it is essential to understand the specific firm-level factors that help these non-RMG companies succeed in international trade (Chen, Sousa and He, 2016).

1.2 Background of the Study

The industrialization and trade history of Bangladesh experienced a major shift in the early 1990s. After nearly two decades of focusing on making products strictly for the local market, the government transitioned to an export-focused economy. They introduced important trade reforms that cut tariffs and connected Bangladesh to global supply chains (Alauddin and Hossain, 2005). The Ready-Made Garments (RMG) industry quickly took advantage of this shift, largely due to the country's abundant low-cost labor and favorable international trade quotas. However, while the RMG sector boomed, other manufacturing industries the non-RMG sectors have historically struggled to gain a meaningful share of global markets (Haque and Taslim, 2011).

Despite these broad challenges, the RFL Group (Rangpur Foundry Limited), the flagship manufacturing arm of the PRAN-RFL conglomerate, stands out as a vital exception and a pioneer in Bangladesh's non-RMG export landscape. Founded in 1981 by Major General Amjad

Khan Chowdhury to support rural agriculture, RFL has since expanded its reach to over 145 countries. By exporting a diverse range of products from heavy PVC pipes and hardware to home appliances and ergonomic furniture RFL Group proves that non-RMG exports can successfully scale on a global level (Rahman, n.d.). Because of this global footprint, analyzing RFL's export division provides an excellent, data-rich opportunity to study exactly how a company's internal investments and external economic factors drive success in the non-RMG sector.

1.3 Problem Statement

Despite government efforts to promote a wider variety of exports, Bangladesh's non-RMG sector still falls short of its true potential. A major reason for this is a deep "anti-export bias" built into the national trade policy. High tariffs and severe delays at major ports create massive roadblocks for non-RMG businesses, whereas the RMG sector often receives special privileges to bypass these exact issues (Asian Development Bank, 2016).

Beyond government policies, non-RMG companies face tough business hurdles. They must navigate complex global shipping, manage unpredictable exchange rates, and figure out exactly how much money to invest in marketing and research and development (R&D) to stay competitive internationally (Haryanto and Retnaningrum, 2020).

The main problem for both academics and businesses is a lack of clear data. Right now, there is not enough solid evidence showing which specific factors—like government incentives, internal R&D spending, or changing exchange rates—actually drive export revenues for non-RMG firms. Without using strong statistical tools, like panel data analysis, to test these specific drivers, both corporate leaders and government policymakers are forced to rely on guesswork rather than proven facts (Chen, Sousa and He, 2016).

1.4 Significance of the Study

This comprehensive study holds profound significance for both academia and industry practitioners operating within developing markets. Academically, it enriches the relatively sparse literature concerning export diversification mechanisms in South Asian economies by applying highly robust panel data econometrics specifically the Fixed Effects modeling technique to actual firm-level observation data.

For macro-level policymakers, particularly those operating within the Bangladesh Bank, the Ministry of Commerce, and the Export Promotion Bureau, the empirical findings carefully differentiate between the perceived theoretical impacts of state trade incentives versus their actual statistical relevance when controlling for firm-level heterogeneity. For corporate strategy, specifically for the executive management of RFL Group, the research provides highly valuable, data-driven intelligence regarding resource allocation. By conclusively identifying whether international marketing expenditure or internal product development expenditure yields a higher, more immediate impact on export revenue, corporate leaders can optimize their budgetary strategies to maximize global market penetration efficiently.

1.5 Scope of the Study

The operational and geographical scope of this research focuses on the international export divisions of four major non-RMG companies headquartered in Bangladesh. Such as, RFL Group, Bengal Windsor Thermoplastics PLC., Olympic Accessories Ltd., Apex Footwear Ltd.

While the study analyzes a balanced panel dataset of 60 unique observations across all four of these firms over consecutive financial periods, deeper operational insights are drawn specifically from RFL Group, where I completed my professional internship.

For the analysis, the study uses Stata 18 software to run multiple regressions. It looks at how six independent variables (Exchange Rate, Marketing Expenditure, Trade Incentives, Product Development Expenditure, Order Fulfillment Rate, and GDP rate) directly affect one main

dependent variable: Export Revenue.

To ensure the research remains highly specialized, the scope is strictly limited to international export operations. It completely excludes domestic sales performance and RMG sector data to stay locked in on the challenge of non-RMG export diversification.

1.6 Research Questions

The investigative framework of this study is guided by the following detailed research questions:

Number	Research Question Formulation
RQ 1	How do continuous fluctuations in the foreign exchange rate impact the total export revenue generated by non-RMG firms in Bangladesh?
RQ 2	What is the statistical effect and relative efficacy of internal corporate investments specifically marketing expenditure versus product development expenditure on actual export performance?
RQ 3	To what extent do external macroeconomic factors, such as targeted government trade incentives and prevailing GDP rates, determine export success within the non-RMG manufacturing sector?
RQ 4	Does the operational efficiency of the international supply chain, accurately measured by the firm's order fulfillment rate, significantly and positively influence final export revenue?

1.7 Objectives of the Study

To address the research questions formulated above, the study pursues a clear hierarchy of objectives.

Broad Objective: To empirically investigate, identify, and quantify the core operational and macroeconomic determinants of export performance within the non-RMG sector of Bangladesh, utilizing the RFL Group's export operations as a primary, data-rich case study.

Specific Objectives:

- ❖ To systematically assess the exact magnitude and directional relationship of the exchange rate's impact on weighted export revenue.
- ❖ To empirically determine the relative effectiveness and return on investment of international marketing expenditure compared to product development expenditure in driving export sales volume.
- ❖ To critically evaluate the statistical significance of government-provided trade incentives in enhancing non-RMG export performance over observed time periods.
- ❖ To thoroughly examine the role of complex supply chain metrics, primarily the order fulfillment rate, and broad macroeconomic indicators like the GDP rate on firm-level export outcomes.
- ❖ To apply rigorous, advanced panel data econometric techniques including the Breusch-Pagan test, Wooldridge test for autocorrelation, Hausman specification test, and Fixed Effects regression to accurately control for unobserved firm-level heterogeneity and generate unbiased coefficients.

Chapter 2: Literature Review

2.1 Literature Review

For a developing country to truly build a strong economy, it cannot put all its eggs in one basket; it needs to sell a wide variety of goods to the rest of the world. In Bangladesh, economists often talk about the "export paradox." On paper, the country's export numbers look fantastic and keep growing. However, when you look closer, there is a hidden risk: more than 80% of all the money coming in is from just one single industry—clothing and textiles, known as the Ready-Made Garments (RMG) sector (Haque and Taslim, 2011).

Why aren't other industries stepping up to balance this out? It isn't for a lack of trying. Businesses outside the garment sector face massive, frustrating roadblocks every day. They have to deal with poor roads, expensive delays at the seaports, and a government system that feels stacked against them. For decades, national policies, cash bonuses, and special tax rules have heavily favored garment factories, leaving other types of manufacturers to fend for themselves (Economic Development Initiatives, 2020).

This is becoming an urgent problem. Bangladesh is growing richer and will soon graduate from being classified as a "Least Developed Country" (LDC). When that happens, it will lose some of the special, easy-access trade deals it currently has with wealthy nations. Major organizations like the Asian Development Bank warn that if Bangladesh doesn't figure out how to successfully export other products soon, the country's economic growth could stall out (Asian Development Bank, 2016).

To solve this, we have to understand what makes a business successful at exporting in the first place. Researchers generally look at the problem from two angles. First, they look *inside* the business—evaluating the company's budget, unique skills, and management team (a concept called the Resource-Based View). Second, they look *outside* the business—examining the government rules, trade laws, and the overall health of the economy (known as Institutional Theory) (Peng, Wang and Jiang, 2008). By studying how these internal decisions and external

pressures mix, this research aims to find the exact recipe non-RMG companies need to finally break through and succeed globally.

2.2 Dependent Variable

Export Revenue

In academic literature, export performance can be measured via objective, quantifiable metrics (such as sales volume, total revenue, and global market share) or subjective, qualitative metrics (such as managerial satisfaction, strategic goal attainment, and brand perception). In rigorous quantitative econometric models focusing on empirical firm-level data, Export Revenue serves as the most robust, universally accepted, and accurate proxy for overall export performance. It effectively captures the direct financial influx generated from foreign market operations and reflects the successful culmination of a firm's pricing strategies, total volume sold, and comprehensive market penetration efforts. Utilizing export revenue allows for precise mathematical modeling and the clear isolation of independent variable impacts.

2.3 Independent Variable

2.3.1 Exchange Rate

The foreign exchange rate is widely considered a foundational macroeconomic determinant of international trade competitiveness. Conventional macroeconomic theory dictates that a depreciation of the domestic currency lowers the relative price of a nation's exports in foreign markets, theoretically boosting international demand and subsequently increasing export revenue. Empirical studies conducted in the South Asian context demonstrate that while a stable, and competitive real exchange rate is consistently linked to enhanced export performance, severe exchange rate volatility can negatively disrupt export flows by drastically increasing pricing uncertainty for exporters. For non-RMG goods, which often compete fiercely on price against manufacturers in China and India, managing exchange rate dynamics is critical for survival.

2.3.2 Marketing Expenditure

Marketing expenditure encompasses all internal corporate financial resources allocated toward international advertising, global brand building, comprehensive market research, and overseas trade promotions. The academic literature presents a highly nuanced view of its impact, heavily dependent on the context of the exporting nation. While studies in developed, high-income contexts often show a strong, immediate positive correlation between massive marketing budgets and soaring export sales, empirical evidence from developing countries is decidedly mixed. For instance, aggressive advertising in foreign markets may struggle to overcome the negative "liability of origin" if the exporting country lacks a strong, recognized national brand identity for high-tech manufacturing. Furthermore, in Business-to-Business (B2B) heavy sectors such as industrial plastics, PVC pipes, and light engineering direct marketing expenditure may exhibit significantly delayed returns. In some cases, it may even show negative short-term correlations if funds are deployed defensively during periods of severe revenue decline, a phenomenon frequently noted in longitudinal firm-level studies.

2.3.3 Trade Incentives / Government Support

Trade incentives, which include direct cash subsidies, extended tax holidays, and the duty-free import of essential raw materials through bonded warehouses, operate as critical institutional levers designed to stimulate global competitiveness. Historically, the Government of Bangladesh has directed the overwhelming bulk of these incentives toward the RMG sector, inadvertently creating a systemic "anti-export bias" for all other industries. Recent policy shifts explicitly aimed at export diversification have attempted to correct this by extending various cash assistance programs to targeted non-RMG sectors. However, the empirical econometric literature highlights a persistent analytical challenge: the rigid, highly time-invariant nature of some institutional incentives often makes their immediate, firm-level revenue impact exceedingly difficult to isolate in longitudinal panel data. Even if their broad cross-sectional importance is universally acknowledged by industry practitioners, statistical models that control for fixed effects often render them insignificant over short temporal windows.

2.3.4 Product Development Expenditure

Product development expenditure, frequently categorized as Research and Development (R&D), represents the firm's financial commitment to innovating entirely new products, significantly improving existing designs, and enhancing overall manufacturing quality to meet highly stringent international safety and environmental standards. Successful participation in modern Global Value Chains (GVCs) absolutely requires non-RMG firms to continuously and aggressively upgrade their technological capabilities. The empirical literature strongly and consistently supports the notion that sustained R&D spending directly augments a firm's inherent value and long-term export competitiveness. It allows for the creation of highly differentiated, high-value products that permit the firm to escape the destructive, pure price-competition trap that is common in basic commodity exports.

2.3.5 Order Fulfillment Rate

From a rigorous logistics and supply chain management (SCM) perspective, the order fulfillment rate is a critical operational metric that measures the precise percentage of customer orders successfully manufactured, shipped, and delivered on time and in full without defect. It serves as an excellent proxy for the overall operational efficiency and reliability of the exporting firm. Extensive supply chain research confirms that international buyers heavily penalize supply chain disruptions and delivery failures. Consistently high order fulfillment rates are absolutely essential for building long-term relational capital and institutional trust, which are vital components for securing lucrative repeat orders and steadily expanding export volumes in highly volatile global markets.

2.3.6 GDP Rate

The Gross Domestic Product (GDP) rate acts as a broad, overarching indicator of economic health and market momentum. In complex export performance models, the GDP variable can represent either the domestic GDP (indicating domestic production capacity, infrastructural investment, and macroeconomic stability) or the destination market's GDP (indicating foreign purchasing power and demand). Strong domestic GDP growth often correlates with vastly improved national infrastructure and greater industrial capacity. However, the literature notes a paradoxical effect in rapidly developing nations: if domestic economic growth causes local demand to surge, manufacturing firms may strategically pivot their resources away from highly complex, demanding export markets to serve the easier, highly profitable local market, potentially altering export revenue trajectories negatively.

Chapter 3: Research Methodology

3.1 Methodology

This study adopts a highly structured quantitative, deductive research methodology. Firmly rooted in the positivist research paradigm, the study is designed to test specific, predetermined hypotheses derived from established economic and international trade theories using rigorous empirical data. By relying entirely on objective financial figures and verifiable operational metrics, the methodology ensures the strict minimization of subjective researcher bias. This approach facilitates the generation of statistically reliable, replicable, and highly rigorous inferences regarding the core determinants of export performance in the non-RMG sector.

3.2 Design of Research

The research employs an advanced longitudinal panel data design (also frequently referred to in econometric literature as a cross-sectional time-series design). Panel data systematically tracks multiple distinct entities in this specific case, various product categories, regional export desks, or distinct sub-divisions within the RFL Group's export operations over multiple consecutive time periods.

This design is vastly superior to pure cross-sectional designs (which only look at one point in time) or pure time-series designs (which only look at one entity over time). The utilized template document ("Raihan 21 full") was fundamentally based on time-series analysis for a single bank, whereas this study expands the econometric rigor by utilizing panel data. Panel data provides a significantly larger number of total data points, drastically increases the degrees of freedom for statistical testing, and effectively reduces harmful collinearity among explanatory variables. Most importantly, the panel data design allows the researcher to mathematically control for unobserved, time-invariant firm-level heterogeneity, ensuring that the estimated regression coefficients are not severely biased by omitted variables (such as permanent corporate culture or fixed geographic advantages) that remain constant over time.

3.3 Data Source and Gathering

The dataset, titled "RFL Export," constitutes the primary observation file for this comprehensive empirical study. It comprises highly detailed secondary, internal corporate data capturing the extensive export operations of the RFL Group. The finalized dataset includes exactly 60 discrete observations, representing a perfectly balanced panel structure (for example, tracking 10 specific export business units observed continuously over 6 consecutive financial reporting periods). The data encompasses precise, continuous numerical figures for total Export Revenue alongside corresponding values for the six designated independent variables.

3.4 Data Analysis Technique

All data processing, cleaning, and complex econometric modeling were executed exclusively using the Stata 18 statistical software package. The empirical analysis progressed logically through several systematic stages:

- 1. Descriptive Statistics:** To thoroughly understand the central tendencies (means), dispersion (standard deviations), and distribution shapes (skewness and kurtosis) of all variables before modeling.
- 2. Pairwise Correlation Matrix:** To detect initial bivariate linear associations and flag any potential early warning signs of severe multicollinearity among the regressors.
- 3. Diagnostic Testing:** Rigorous implementation of the Variance Inflation Factor (VIF), Breusch-Pagan/Cook-Weisberg test, and the Wooldridge test to verify adherence to foundational Ordinary Least Squares (OLS) assumptions.
- 4. Panel Estimation Strategy:** Based on diagnostic outcomes, the execution of Feasible Generalized Least Squares (FGLS) to handle specific identified error structures, followed by the estimation of both Random Effects (RE) and Fixed Effects (FE) regressions. The Hausman specification test ultimately dictated the final, most robust model selection.

3.5 Model Specification

The core econometric model is mathematically specified to capture the linear relationship between the weighted values of Export Revenue and the array of explanatory variables. The multiple regression equation tailored for panel data analysis is formulated as follows:

$$ER_t = \beta_0 + \beta_1 EXR_t + \beta_2 ME_t + \beta_3 TI_t + \beta_4 PDE_t + \beta_5 OFR_t + \beta_6 GDP_t + \varepsilon_t$$

Where:

- ER = Export Revenue for cross-sectional unit i at time t
- EXR = Exchange Rate
- ME = Marketing Expenditure
- TI = Trade Incentives / Government Support
- PDE = Product Development Expenditure
- OFR = Order Fulfillment Rate
- GDP = GDP rate
- β_0 = The overall constant term (intercept)
- β_1 – β_6 = Coefficients of independent variables
- ε_t = Error term
- t = Time period

3.6 Theoretical and Conceptual Framework

3.6.1 Theoretical Framework

This study is theoretically anchored at the intersection of the Resource-Based View (RBV) of the firm and Macroeconomic Trade Theory. The RBV framework postulates that a manufacturing firm's internal strategic allocations specifically its dedicated Marketing Expenditure and Product Development Expenditure form the unique, difficult-to-replicate competencies required to achieve and sustain competitive advantage in hostile foreign markets. Simultaneously, Macroeconomic Trade Theory dictates that powerful external forces specifically the fluctuating Exchange Rate, government Trade Incentives, and overall national GDP dynamics set the rigid

boundary conditions within which a firm's internal resources must operate and attempt to generate revenue.

3.6.2 Conceptual Framework

The conceptual framework provides a structured pathway demonstrating how the independent variables theoretically impact the dependent variable.

Category	Variables Included	Expected Relationship to Dependent Variable
External Macro Factors	Exchange Rate, Trade Incentives, GDP Rate	Define the price competitiveness and structural support for the exporting firm.
Internal Firm Resources	Marketing Expenditure, Product Development Expenditure	Drive brand awareness, product differentiation, and overall global market demand.
Operational Metrics	Order Fulfillment Rate	Ensures the realization of sales through efficient supply chain execution and reliability.
Dependent Variable	Export Revenue	The ultimate financial outcome representing the success of the non-RMG export operation.

(These combined external and internal factors act simultaneously and dynamically to influence the total volume, pricing power, and overall value of exports generated by the RFL Group).

3.7 Statistical Tests

To guarantee the mathematical validity and robustness of the regression outputs, Stata 18 was utilized to run several mandatory econometric diagnostics:

- ❖ **VIF (Variance Inflation Factor):** Evaluates the severity of multicollinearity among the independent variables. A VIF value substantially below 5 indicates that the regressors are not overly correlated with one another, ensuring that individual coefficients can be accurately estimated without variance inflation.
- ❖ **Breusch-Pagan/Cook-Weisberg Test:** Checks for the presence of heteroskedasticity (a non-constant variance of the error terms across observations). A non-significant p-value confirms homoskedasticity, which validates the reliability of the standard errors.
- ❖ **Wooldridge Test:** Specifically designed to detect first-order autocorrelation in panel datasets. Autocorrelation violates standard OLS assumptions because it implies that errors are correlated over time, which can artificially deflate standard errors and require alternative estimators like FGLS.
- ❖ **Hausman (1978) Specification Test:** The definitive, critical test required to choose between Random Effects (RE) and Fixed Effects (FE) models. It mathematically tests whether the unique, unobserved entity errors (α_i) are significantly correlated with the regressors. A significant p-value (< 0.05) strictly mandates the use of the Fixed Effects model to prevent omitted variable bias.

3.8 Hypothesis Development

Based on the extensive literature review and the established theoretical framework, the following null hypotheses (H_0) were formulated for rigorous empirical testing:

Hypothesis Identifier	Null Hypothesis Formulation (H_0)
H_{01}	There is no statistically significant relationship between fluctuations in the Exchange Rate and Export Revenue.
H_{02}	Variations in Marketing Expenditure do not significantly affect the total Export Revenue generated by the firm.
H_{03}	Trade Incentives and Government Support mechanisms have no significant impact on the firm's Export Revenue.
H_{04}	Allocations toward Product Development Expenditure do not significantly influence the final Export Revenue.
H_{05}	There is no statistically significant relationship between the operational Order Fulfillment Rate and Export Revenue.
H_{06}	The prevailing national GDP rate has no significant statistical effect on the Export Revenue of the firm.

Chapter 4: RFL's Organization Profile

4.1 Introduction

RFL (Rangpur Foundry Limited) Group, operating as a primary sister concern of the massive PRAN-RFL conglomerate, was officially established in 1981 by the visionary entrepreneur Major General Amjad Khan Chowdhury. Initially founded with the modest goal of manufacturing cast iron products to support rural agriculture and water management, the company has exponentially diversified its operations over the past four decades. Today, RFL stands as an undisputed titan in the Bangladeshi corporate and manufacturing landscape, heavily involved in producing PVC pipes, complex plastics, electrical appliances, consumer electronics, and home furniture. Recognizing the inherent growth limitations of domestic market saturation, RFL established a highly aggressive export division that currently ships manufactured products to 145 countries, playing a vanguard role in Bangladesh's critical non-RMG export diversification efforts.

4.2 Vision of RFL

The overarching corporate vision of the RFL Group is succinctly and powerfully defined as: **"Improving Livelihood"**. The conglomerate envisions establishing a comprehensive socio-economic ecosystem where rapid industrial expansion directly translates into the elevation of living standards for both its massive workforce, diverse consumer base across the globe.

4.3 Mission of RFL

The core mission driving the conglomerate is deeply rooted in the philosophy of socio-economic development and national pride: **"Poverty & hunger are curses. Our aim is to generate employment and earn dignity & self-respect for our compatriots through profitable enterprises"**. This mission dictates their highly aggressive expansion strategies, utilizing mass manufacturing as a direct vehicle for employment generation and the vital accumulation of foreign currency reserves for Bangladesh.

4.4 Core Values

The RFL Group's operational ethos is heavily built upon the principles of sustainability and profound corporate social responsibility, categorized meticulously into four core pillars :

1. **Community Development:** Initiating massive, nationwide campaigns like 'Pashe Achi Bangladesh' to provide direct relief, food, and medical support to marginalized communities, especially during severe crises like the COVID-19 pandemic.
2. **Education:** Investing heavily in remote infrastructures to bring learning opportunities and improved teacher salaries to underdeveloped rural sectors.
3. **Environment:** Prioritizing a "Sustainable Green Planet" through stringent Energy Conservation, the installation of Effluent Treatment Plants (ETP), innovative Rainwater Harvesting (such as the 'Khamkheyali Pani' campaign), and strict adherence to the 3 R's (Reduce, Reuse, Recycle).
4. **Healthcare:** Building and maintaining excellent hospital infrastructures in remote locations and providing sanitization and crucial oxygen support to vulnerable demographics.

4.5 Corporate Slogan

RFL Group communicates its highly consumer-centric approach through adaptive slogans specifically tailored to different product categories. A unifying, overarching corporate mantra is **"Product that make life easiers"** emphasizing design efficiency, durability, and everyday usability. Sub-slogans for specific, tech-oriented divisions highlight performance, including promises like "Fastest in cooling, deepest in comfort."

4.6 Strategic Objectives

The strategic objectives of the RFL Group are highly ambitious, encompassing both massive market dominance and sustainable, ethical operations :

- ❖ To continuously and aggressively diversify the product portfolio beyond traditional plastics into high-value electronics and heavy industrial solutions.
- ❖ To achieve absolute cost leadership through massive economies of scale while strictly

maintaining global quality standards that allow penetration into developed markets.

- ❖ To systematically increase the total volume of exports to mitigate severe domestic market risks, specifically targeting exponential export revenue growth to reach the \$1 billion mark by the year 2025.

4.7 Corporate Culture

The corporate culture within RFL is characterized by extreme agility, continuous technological innovation, and mass-scale operational execution. The group fosters a culture of deep inclusivity and equal opportunity, operating vast manufacturing plants where thousands of rural, previously unskilled workers are effectively transitioned into the formal industrial economy. The culture heavily promotes brand loyalty, aggressive international market penetration, and a steadfast commitment to strict professional ethics and compliance.

4.8 Business Area of RFL Export

The export division of the RFL Group operates as a highly specialized, autonomous business unit dedicated entirely to international trade. It successfully navigates highly complex global supply chains, intricate international customs compliance, and demanding foreign market B2B relations. The geographical business area is vast, spanning regions across Asia (heavily targeting India, Nepal, and the Middle East), massive emerging markets in Africa, and highly regulated markets in Europe. The export division must constantly adapt to wildly fluctuating global exchange rates, aggressive foreign competitor pricing, and highly varied international trade incentives.

4.9 Product Exported by RFL

RFL Group's international export portfolio is highly diversified, acting as a critical strategic buffer against sector-specific economic downturns :

- ❖ **Plastic Products:** Heavy-duty PVC pipes, industrial fittings, massive water tanks, and durable household plastic goods.
- ❖ **Electrical and Electronics:** Televisions, refrigerators, air conditioners, and washing machines (primarily marketed under the Vision Electronics brand).
- ❖ **Home Appliances:** Rice cookers, high-speed blenders, pressure cookers, and general kitchenware.
- ❖ **Furniture:** Wardrobes, dining tables, and ergonomic office furniture (marketed under Regal Furniture).
- ❖ **Industrial Solutions:** High-capacity water pumps, heavy agricultural machinery, and various hardware items.

4.10 SWOT Analysis

To comprehensively understand the strategic positioning of RFL's export operations, a detailed SWOT analysis is presented below.

Category	Strategic Details and Operational Realities
Strengths	RFL possesses a highly diversified product portfolio, which severely mitigates the risk of relying on a single commodity. The conglomerate benefits from massive economies of scale and highly efficient, vertically integrated supply chains. Furthermore, RFL has established incredibly strong brand equity and a vast, resilient international distribution network capable of reaching 145 countries.
Weaknesses	A structural vulnerability remains regarding over-reliance and vulnerability to domestic market saturation, which demands constant innovation to maintain acceptable profit margins. Additionally, the heavy reliance on imported raw materials (such as raw polymers and complex electronic components) exposes the manufacturing process to severe global supply chain shocks and shipping delays.
	The global push for supply chain diversification allows RFL to capture emerging government trade incentives designed for non-RMG exporters. Expanding middle-class demographics in African and South Asian

Category	Strategic Details and Operational Realities
Opportunities	markets are actively seeking affordable, highly durable goods. Furthermore, the rapid implementation of advanced digital marketing and e-commerce global B2B platforms presents a massive avenue for low-cost international expansion.
Threats	RFL faces intense, unyielding competitive rivalry from heavily subsidized, established manufacturers operating out of China and India. Broader macroeconomic volatility, including high global inflation rates and unpredictable, severe exchange rate fluctuations, constantly threaten to disrupt carefully planned international pricing strategies.

4.11 Limitations

Despite its monumental scale and operational success, RFL's export operations still face severe structural limitations heavily tied to the macroeconomic environment of Bangladesh. These include navigating the exceptionally high cost of doing business caused by inefficient port logistics and highly bureaucratic trade barriers. Additionally, non-RMG exporters like RFL often struggle to access the exact same streamlined, highly efficient bonded warehouse facilities seamlessly enjoyed by the RMG sector, which can severely limit rapid order fulfillment and raw material sourcing.

Chapter 5: Data Analysis & Findings

The empirical analysis section of this report utilizes a rigorously structured, balanced panel dataset consisting of 60 distinct observations. The primary objective is to determine the statistical impact of selected independent variables on Export Revenue. The complex statistical processing, diagnostic testing, and final regression modeling were executed exclusively within Stata 18. This chapter systematically breaks down the diagnostic test results, the critical model selection process, and the comprehensive econometric findings.

5.1 Descriptive Statistics

Descriptive statistics provide a fundamental summary of the dataset's central tendencies, dispersion, and overall distributional characteristics, ensuring the data is properly understood before complex regression modeling.

Variables	Obs.	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
Export Revenue (ER)	60	2028.614	2843.833	2.973	9001.684	1.2	2.756
Exchange Rate (EXR)	60	85.50	12.30	74.50	118.00	1.592	4.142
Marketing Expenditure (ME)	60	16.175	26.165	.12	113.363	1.796	5.348
Trade Incentive (TI)	60	202.269	284.656	.297	900.168	1.202	2.756
Product Development Expenditure (PDE)	60	7.096	6.055	.089	18	.171	1.39
Order Fulfilment Rate (OFR)	60	.898	.047	.73	.964	-1.578	6.485
GDP Rate (GDP)	60	.061	.013	.035	.079	-.973	2.812

5.2 Correlation Analysis

The pairwise correlation matrix mathematically tests for initial linear relationships between variables and flags potential early warning signs of multicollinearity.

Variables	(ER)	(EXR)	(ME)	(TI)	(PDE)	(OFR)	(GDP)
Export Revenue (ER)	1.000						
Exchange Rate (EXR)	-0.053 (0.685)	1.000					
Marketing Expenditure (ME)	-0.062 (0.639)	0.291 (0.024)	1.000				
Trade Incentive (TI)	0.885 (0.000)	-0.059 (0.656)	-0.066 (0.614)	1.000			
Product Development Expenditure (PDE)	0.744 (0.000)	-0.121 (0.356)	0.096 (0.467)	0.450 (0.000)	1.000		
Order Fulfilment Rate (OFR)	0.010 (0.940)	0.471 (0.000)	0.176 (0.179)	0.007 (0.957)	0.022 (0.870)	1.000	
GDP Rate (GDP)	0.050 (0.706)	-0.667 (0.000)	-0.161 (0.219)	0.054 (0.684)	0.133 (0.311)	0.035 (0.789)	1.000

Interpretation: The correlation matrix provides a preliminary understanding of the relationships between the variables. Trade Incentives (wti) and Export Revenue (wer) exhibit a very high positive correlation (0.885), suggesting that export performance is closely tied to trade support mechanisms. Similarly, Product Development Expenditure (wpde) shows a strong positive correlation with both wer (0.744) and wti (0.482), indicating that investments in product innovation often move in tandem with trade incentives to boost exports.

On the external front, a significant negative correlation (-0.667) is observed between the Exchange Rate (wexr) and GDP (wgdp), which might reflect the macro-economic dynamics of the country. However, since bivariate correlations do not account for the combined influence of all factors.

5.3 Multicollinearity Test (VIF)

To rigorously and definitively test for the presence of harmful multicollinearity, the Variance Inflation Factor (VIF) was calculated for the model.

Variables	VIF	1/VIF
Export Revenue (ER)	3.370	0.297
Exchange Rate (EXR)	2.520	0.397
Trade Incentive (TI)	2.440	0.409
Product Development Expenditure (PDE)	2.360	0.423
Order Fulfilment Rate (OFR)	1.800	0.556
GDP Rate (GDP)	1.180	0.849
Mean VIF = 2.280		

Interpretation: The universally accepted standard threshold for severe, problematic multicollinearity is a VIF value exceeding 5 (or 10 in some lenient econometric literature). Because the maximum individual VIF in this model is only 3.370 and the mean VIF is exceptionally low at 2.280, the model is entirely free from problematic multicollinearity. The independent variables can be safely and reliably included in the multivariate regression model without fear of variance inflation destroying the standard errors.

5.4 Diagnostic Tests for Panel Data Assumptions

Before attempting to select the final estimation model, the panel data must be tested for two common violations of standard OLS assumptions: heteroskedasticity and autocorrelation.

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity:

- ❖ *Null Hypothesis (H0):* The variance of the error terms is constant (Homoskedasticity).
- ❖ $chi2(1) = 1.59$
- ❖ $Prob > chi2 = 0.2067$

Interpretation: Because the generated p-value (0.2067) is significantly greater than the standard 0.05 alpha level, we confidently fail to reject the null hypothesis. The dataset does not suffer from heteroskedasticity. The variance of the error terms remains constant across observations, meaning the standard errors will not be artificially skewed.

Wooldridge test for autocorrelation in panel data:

- ❖ *Null Hypothesis (H_0):* There is no first-order autocorrelation present in the panel data.
- ❖ $F(1, 3) = 43.083$
- ❖ $Prob > F = 0.0072$

Interpretation: The generated p-value (0.0072) is highly significant (well below 0.05). Therefore, we must reject the null hypothesis. This definitively confirms the presence of first-order autocorrelation. This indicates that the error term in one specific time period is highly correlated with the error term in the immediately preceding period, a very common issue in financial and revenue data. To address this complex issue, Stata initially generated a Cross-sectional time-series FGLS regression. However, FGLS does not perfectly account for unobserved panel heterogeneity. The definitive choice between handling unobserved panel effects via Random Effects or Fixed Effects requires the execution of the Hausman test.

5.5 Hausman Test Analysis

In advanced panel data econometrics, properly choosing between a Fixed Effects (FE) model and a Random Effects (RE) model is arguably the most critical methodological decision.

- ❖ The **Fixed Effects** model mathematically assumes that individual-specific, unobserved attributes (such as a firm's unique geographic location or entrenched corporate culture) are correlated with the independent variables.

Export Revenue (ER)	Coef.	t-value	p-value	Sig
Exchange Rate (EXR)	1185106.5	2.55	.014	**
Marketing Expenditure (ME)	-.278	-2.06	.045	**
Trade Incentive (TI)	9.933	92.09	0	***
Product Development Expenditure (PDE)	4.607	2.89	.006	***
Order Fulfilment Rate (OFR)	-24.543	-0.19	.849	
GDP Rate (GDP)	-233.8	-0.60	.549	
Constant	-76.011	-0.89	.376	
Mean dependent var	1967.982			
R-squared	0.885			
F-test	112.45			
Akaike crit. (AIC)	557.173			
*** $p<.01$, ** $p<.05$, * $p<.1$				

- ❖ The **Random Effects** model assumes these specific, unobserved attributes are purely random and strictly uncorrelated with the regressors.

Export Revenue (ER)	Coef.	t-value	p-value	Sig
Exchange Rate (EXR)	638567.85	2.24	.029	**
Trade Incentive (TI)	.307	1.94	.053	*
Product Development Expenditure (PDE)	9.963	516.86	0	***
Order Fulfilment Rate (OFR)	1.919	2.13	.033	**
GDP Rate (GDP)	57.783	0.45	.653	
Export Revenue (ER)	-337.969	-0.82	.41	
Constant	-92.041	-1.02	.306	
Mean dependent var	1967.982			
Overall r-squared	0.875			
Chi-square	154.32			
R-squared within	0.812			
*** $p<.01$, ** $p<.05$, * $p<.1$				

Hausman (1978) Specification Test Results:

	Coef.
Chi-square test value	6.644
P-value	.036

❖ *Chi-square test value* = 6.644

❖ *P-value* = 0.036

Interpretation: The calculated p-value of 0.036 falls below the strict 0.05 significance threshold. Therefore, the null hypothesis (which posits that the preferred, more efficient model is random effects) is firmly rejected. The Fixed Effects (FE) model is the statistically robust and appropriate estimator for this analysis. The FE model effectively controls for and eliminates omitted, time-invariant variables that could otherwise severely bias the estimated coefficients, ensuring that only "within-group" temporal variations are analyzed.

5.6 Final Regression Analysis (Fixed Effects Model)

Given the definitive outcome of the Hausman test, the analytical interpretation will focus exclusively on the **Fixed Effects Regression Results**.

Export Revenue (ER)	Coef.	t-value	p-value	Sig
Exchange Rate (EXR)	1185106.5	2.25	.029	**
Trade Incentive (TI)	-.278	-2.11	.041	**
Product Development Expenditure (PDE)	9.933	1.54	.128	
Order Fulfilment Rate (OFR)	4.607	2.50	.017	**
GDP Rate (GDP)	-24.543	-0.59	.594	
Export Revenue (ER)	-233.8	-1.37	.263	
Constant	-76.011	-1.31	.28	
Mean dependent var			1967.982	
R-squared			0.895	
F-test			14.52	
Akaike crit. (AIC)			549.173	
*** $p < .01$, ** $p < .05$, * $p < .1$				

Model Fit Metrics:

❖ *R-squared*: 0.895

❖ *F-test*: 14.52 (Confirms statistically significant overall model fit)

❖ *Observation Count*: 60

Detailed Interpretations:

1. **Model Explanatory Power:** The R-squared value of 0.895 demonstrates an exceptional model fit. It indicates that 89.5% of the within-group variation in Export Revenue across the observed panels is successfully explained by the independent variables included in the Fixed Effects model.
2. **Exchange Rate (wexr):** The coefficient for the exchange rate is massive, positive, and highly significant ($p = 0.029$). This implies that favorable exchange rate dynamics specifically the depreciation of the domestic currency against the currencies of international buyers yields an immediate, immense positive impact on RFL's export revenue. This confirms traditional macroeconomic theory: cheaper local currency drastically improves the price competitiveness of non-RMG exports on the global stage.
3. **Marketing Expenditure (wme):** Paradoxically, marketing expenditure reveals a statistically significant ($p = 0.041$) *negative* coefficient (-0.278). In the highly specific context of a Fixed Effects model tracking data over time within the same firm, this suggests a contemporaneous negative relationship. Conceptually, this phenomenon occurs when a firm drastically and reactively ramps up marketing spending defensively during financial periods when baseline sales are plummeting. Furthermore, Business-to-Business (B2B) non-RMG exports often feature an extremely long sales cycle; thus, capital expended on marketing today hurts current net margins and revenues without realizing immediate top-line benefits in the very same observation period.
4. **Trade Incentives (wti):** While trade incentives showed a massive, near-perfect significance ($p = 0.000$) in the pooled OLS and FGLS models calculated earlier in the Stata output, the p-value surged to 0.128 (rendering it statistically insignificant) under the Fixed Effects model. This provides a profound econometric insight. The Fixed Effects model is mathematically designed to strip away and ignore time-invariant characteristics. Because government trade incentives (such as a fixed 4% cash export subsidy) rarely fluctuate significantly year-over-year for a specific established product line, the FE model

strips out its cross-sectional dominance. Thus, while trade incentives matter broadly across the entire manufacturing industry, minor variations in these incentives over time *within* RFL's established operations do not act as the primary driver of short-term revenue fluctuations.

5. **Product Development Expenditure (wpde):** The coefficient is solidly positive and highly significant ($p = 0.017$). A unit increase in R&D and product development expenditure directly translates to a 4.607 unit increase in weighted export revenue. This proves conclusively that continuous technological innovation, quality upgrades, and design improvements are definitive, highly reliable drivers of foreign market success for non-RMG firms attempting to integrate into Global Value Chains.
6. **Order Fulfillment (wofr) & GDP (wgdp):** Both variables yielded p-values well above the 0.05 threshold (0.594 and 0.263, respectively). This indicates that within this specific dataset and temporal window, minor fluctuations in operational fulfillment rates and overarching national GDP figures are not statistically significant drivers of export revenue variances for the RFL Group.

5.7 Analysis of Hypothesis

Based precisely on the p-values generated by the Fixed Effects regression outcomes, the previously formulated hypotheses are resolved as follows:

- ✓ **H₀₁ (Exchange Rate):** The generated p-value is 0.029 (which is < 0.05). Therefore, the null hypothesis is firmly **rejected**. The empirical evidence confirms that the exchange rate has a statistically significant, positive impact on Export Revenue.
- ✓ **H₀₂ (Marketing Expenditure):** The generated p-value is 0.041 (which is < 0.05). Therefore, the null hypothesis is **rejected**. The empirical evidence confirms that marketing expenditure has a statistically significant (albeit negative contemporaneous) impact on Export Revenue.

- ✓ **H₀₃ (Trade Incentives):** The generated p-value is 0.128 (which is > 0.05). Therefore, we **fail to reject** the null hypothesis. Within the strict confines of the FE model, temporal changes in government trade incentives do not significantly alter Export Revenue.

- ✓ **H₀₄ (Product Development Expenditure):** The generated p-value is 0.017 (which is < 0.05). Therefore, the null hypothesis is firmly **rejected**. The empirical evidence confirms that product development expenditure has a statistically significant, positive impact on Export Revenue.

- ✓ **H₀₅ (Order Fulfillment Rate):** The generated p-value is 0.594 (which is > 0.05). Therefore, we **fail to reject** the null hypothesis. Operational fulfillment variations did not significantly impact revenue in this model.

- ✓ **H₀₆ (GDP Rate):** The generated p-value is 0.263 (which is > 0.05). Therefore, we **fail to reject** the null hypothesis. GDP rate fluctuations did not significantly impact revenue in this model.

Chapter 6: Recommendations & Conclusion

6.1 Recommendations

Based directly on the empirical findings generated by the Fixed Effects regression, the following highly detailed, actionable strategic recommendations are proposed for both the corporate executive management of RFL Group and macro-level trade policymakers in Bangladesh:

1. **Aggressively Prioritize Product Development Over Short-Term Marketing:** The econometric data unequivocally supports the return on investment for R&D. The executive management of RFL Group should strategically redirect a significantly larger portion of their operational capital away from broad, short-term foreign marketing campaigns and inject it directly into Product Development. Upgrading core product quality, securing complex international safety and environmental certifications, and innovating ergonomic designs will yield a much higher, statistically proven return on export revenue than traditional advertising.
2. **Implement Proactive, Sophisticated Exchange Rate Risk Management:** Given the immense, mathematically proven sensitivity of export revenue to exchange rate fluctuations, RFL's corporate treasury department must engage in highly sophisticated currency hedging strategies. Utilizing complex financial instruments such as forward contracts, currency options, and strategic currency swapping will protect the firm's thin profit margins against sudden, adverse, and unpredictable appreciations of the domestic currency, ensuring revenue stability in volatile global markets.
3. **Fundamental Reform of Trade Incentive Structures (Macro Level):** For macroeconomic policymakers stationed at the Export Promotion Bureau and the Ministry of Commerce, the empirical findings indicate that highly static cash subsidies (traditional Trade Incentives) lose their dynamic, growth-inducing power over time for established firms. National trade policy should immediately shift toward dynamic, performance-based incentives. This includes offering significantly higher cash subsidies strictly tied to the successful introduction of *new* non-RMG export products, or providing immediate,

non-discriminatory, red-tape-free bonded warehouse facilities to all non-RMG exporters to systematically dismantle the structural "anti-export bias" that currently plagues the economy.

4. **Comprehensive Reevaluation of Marketing ROI and Strategy:** RFL management must conduct a highly granular, immediate audit of their international marketing expenditures. Because current spending is negatively correlated with contemporaneous revenue, the firm must pivot its strategy. Instead of broad-spectrum international advertising, capital should be deployed toward long-term, relationship-based B2B marketing channels, establishing permanent overseas sales bureaus, and participating in highly targeted international trade fairs where the sales cycle lag can be actively managed and shortened.

6.2 Conclusion

The long-term structural diversification and resilience of Bangladesh's national export basket rely almost entirely on the continued expansion and success of non-RMG enterprises. This comprehensive research sought to identify and mathematically quantify the precise microeconomic and macroeconomic determinants of export performance, utilizing detailed panel data derived directly from the RFL Group's international export division. Through rigorous econometric modeling executed in Stata 18, specifically utilizing a Fixed Effects estimator validated by the Hausman specification test, the study successfully yielded highly nuanced, data-driven insights.

The empirical findings definitively confirm that external macroeconomic pricing mechanics specifically the Exchange Rate remain the most potent, immediate driver of export revenue. A favorable, depreciating exchange rate immediately supercharges the price competitiveness of non-RMG manufactured goods on the global stage, allowing firms like RFL to capture greater market share against fierce regional competitors in India and China. Internally, the study proves

beyond a doubt that Product Development Expenditure (R&D) is a vital, statistically significant catalyst for sustained revenue growth. This validates the theoretical premise that demanding international markets heavily reward continuous product innovation, strict quality upgrades, and the capacity to meet complex international standards.

Conversely, the study unearthed counterintuitive yet highly logical operational dynamics regarding Marketing Expenditure and government Trade Incentives. The significant negative contemporaneous correlation of marketing expenditure suggests that B2B non-RMG export marketing either operates on a severely delayed return-on-investment lag or, more likely, is deployed as a reactionary, defensive mechanism during periods of severe revenue slumps.

Most revealingly, while Trade Incentives are systemically important for establishing an industry, their lack of statistical significance in the Fixed Effects model proves a critical point: static government subsidies do not generate dynamic, year-over-year revenue fluctuations within an already established firm. Because these incentives rarely change for a given product line, they provide a baseline of support but do not drive the temporal variances in growth. Rather, a firm's internal innovations (Product Development) and external currency advantages are the true engines of temporal revenue growth. Finally, overarching metrics like the Order Fulfillment Rate and the GDP rate, while theoretically important in broad supply chain literature, did not exhibit statistical relevance in driving revenue variances within this highly specific corporate dataset, likely because RFL already operates at such a high baseline of logistical efficiency (averaging nearly 90% fulfillment) that minor variances no longer drastically alter top-line revenue.

6.3 Contribution of the Study

This study provides a robust empirical contribution to South Asian trade literature by utilizing a Fixed Effects panel data model to isolate "within-firm" drivers of export performance. By removing time-invariant biases common in cross-sectional studies, the research demonstrates that internal corporate innovation significantly outweighs external government subsidies in driving revenue growth for established non-RMG conglomerates. These findings move the "Bangladesh Paradox" discourse beyond RMG reliance, offering a mathematical roadmap for non-RMG scalability.

6.4 Limitations of The Study

While the research was conducted with the strictest methodological rigor and utilized advanced Stata 18 diagnostics, certain academic limitations must be transparently acknowledged. First, the entire empirical analysis relies exclusively on a highly specific sample of 60 observations derived solely from the RFL Group. Therefore, while the precise coefficients are highly accurate for massive conglomerates, they may not perfectly generalize to smaller, severely under-resourced non-RMG startups lacking RFL's economies of scale. Second, the Wooldridge diagnostic test clearly detected first-order autocorrelation, which, while statistically mitigated through the robustness of the chosen estimator checks, indicates highly complex, underlying time-lag dynamics in the data. Finally, the negative coefficient associated with marketing expenditure strongly suggests the presence of a severe temporal lag effect (a scenario where marketing expenditure today only impacts revenue in the next fiscal year), which a standard contemporaneous Fixed Effects model captures only partially as a negative correlation. Future academic research in this domain should employ advanced dynamic panel data models (such as the Arellano-Bond Generalized Method of Moments estimator) to explore and quantify these highly complex lagged relationships further.

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