Optimizing Revenue for a Freight Forwarding Company

A Mid-Term report for the BDM capstone Project

Submitted by

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Contents

1 Executive Summary

The project focuses on a freight forwarding multinational company (MNC) that operates across India. It is a service-based company serving the B2B segment and providing services in the Logistics and Freight Forwarding sector. The major business issue the company currently faces is stagnant revenue over the past five years, caused by not leveraging potential new markets and key commodities, weak B2B marketing and digital presence, and inadequate Digital Customer Relationship Management.

To address these issues, the company's sales performance data from Direct Shipments was analyzed, starting with data collection, cleaning, and preprocessing, followed by performing descriptive statistics to measure central and variational tendencies, and finally performing preliminary (exploratory) analysis to find early trends and patterns.

The analysis section was divided into two parts, Quantitative Analysis for numerical data (where Trend, Segment and Ratio Analysis was performed to evaluate the behavior of Revenue and Gross Profit across quarters and segments like Office Branches, Commodities, Customer Type etc.) and Qualitative Analysis for qualitative (non-numerical) data consisting of collection of facts regarding the company's Marketing, CRM (Customer Relationship Management) and digital presence and evaluating them to work towards the proposed solution. Finally, all the results and findings were reported in the last section of this report.

2 Proof of Originality of the Data

After discussing with Mr. Manish Singh, the managing director for NNR Global Logistics India, he agreed to share the sales performance data of Direct Shipments, comprising Air & Ocean Import & Export of the entire company for the last 2 years. While discussing, he was quite straightforward about the problem faced by the company and showed eagerness towards the intended data analysis about to be performed on the company's data. The details of the business are as follows:

Business Name: NNR Global Logistics India Private Limited

Business Type: B2B (Business to Business)

Business Sector: Tertiary/Service Sector

Business Industry: Freight Forwarding and Logistics

Head Office Address: Unit 1007, 10th Floor, Magnum Towers, Sector-58, Gurugram, Haryana – 122011

Phone: +91-124-4642100

Email: info@nnrindia.in

Website: NNR Global Logistics

Project Mid-Term Folder

2.1 Letter from Organization

NNR GLOBAL LOGISTICS INDIA PVT. LTD.

July 8, 2025

TO WHOMSOEVER IT MAY CONCERN

This is to confirm that **Mr. Kavish Pal Singh**, a student of the BS in Data Science and Applications at Indian Institute of Technology Madras, has been granted permission by **NNR Global Logistics India Private Limited** to collect and utilize relevant company data exclusively for the purpose of undertaking the **BDM Capstone Project**.

1. The company consents to the use of its data solely within the scope of the aforementioned project, in accordance with the academic requirements of IIT Madras.
2. We hereby issue this **No Objection Certificate** at the request of **Mr. Kavish Pal Singh** with the understanding that all data will be handled with due confidentiality and used strictly for academic analysis and reporting.

Sincerely,

Manish Singh

Managing Director, NNR Global Logistics India Pvt. Ltd.

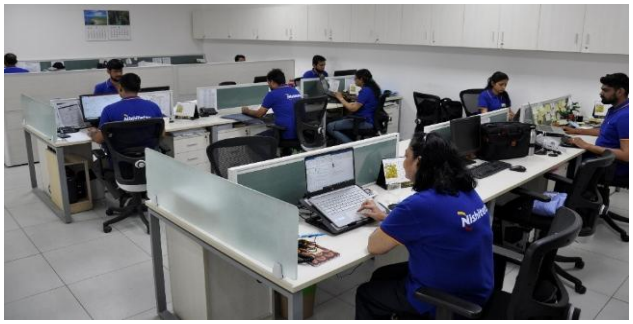
We are ISO 9001:2015, Certified Company

Regd. Office Address : Khasra No. - 335/2, 333/1, NH-8, Rangpuri, New Delhi - 110 037
Head Office : Unit 1007, 10th Floor, Magnum Towers, Sector-58, Gurgaon, Haryana-122011, INDIA Tel.: +91-124-4642100
Delhi Office : 335/2, Daya Complex, IIIrd Floor, Rangpuri, N.H.-8, New Delhi-110037
Mumbai Office : UNIT No. 302, Antariksh House, Makwana Road, Marol Naka, Andheri East Mumbai-40059. Tel.: 91-22-61904900
Bangalore Office : No. 2M 427, 3rd Floor, 2nd Main Road, East of NGEF, Kasturi Nagar, Bangalore-560043, Karnataka. Tel.: +91-80-35003399
Chennai Office : New No. 8, Venu Reddy Street, Ozhoty, Chennai-600 032, Tel.: +91-44-42976000
Kolkata Office : BH-40/1, Jessore Road, City Mal Market, Shop No.-101, P.O. Rajbari, P.S.-Airport, Kolkata-700 081, Dist-North 24-Pargana, West Bengal. Phone: 9830335523
Hyderabad Office : 9102, Technopolis Building, Chikoti Garden, Begumpet, Hyderabad - 500016, India. Tel.: +91-40-40888601
Kochi Office : #35/1466A, 1st Floor, Chuttupadukara, Edappally, S.O. Ponekkara Road, Near Parthasarathy Temple, Ernakulam, 682024, Kerala, India. Tel.: +91-73567544888
Ahmedabad Office : 206, Sakar - 9, Next to old reserve Bank, Ashram Road, Ahmedabad - 380009, Mob.: 9898060214.
Email : info@nnrindia.com
CIN # U63090DL2006PTC152957

2.2 Photographs of the Organization

Photograph-1

NNR Global Logistics Warehouse at Farukhnagar, Gurugram, Haryana



Photograph-2

NNR Global Logistics Head Office, Gurugram, Haryana

2.3 Interview with the Managing Director

Video Link

2.4 Data Collection, Cleaning and Preprocessing

The sales performance data was collected over email in the form of Microsoft Excel Workbooks. The sales performance data provided by the company was for the last 2 financial

years, FY-23-24 and FY-24-25, where each year's data was in a separate Excel Workbook. The first step was to prepare the data, where these workbooks were merged into a single workbook having 2 sheets, where each sheet represented the consolidated sales performance data for each year. At the same time, the facts regarding the company's marketing and CRM were collected to gain some insight into how the company handles these aspects. After collecting these facts, the next step after was to perform data cleaning and preprocessing, which included the following key steps:

1. The **Mode** column was renamed as **Type of Shipment** to capture all types of shipments that the business handles. Since the business also handles Customs Clearance for Ocean and Air Import/Export shipments, a set of new values was introduced to represent them: **CC-AI**, **CC-AE**, **CC-OI,** and **CC-OE**.
2. Some of the records were misclassified as **Air Import,** but after verifying Origin and Destination for the records, they were changed to **Air Export**.
3. Some of the records were misclassified under **Type of Shipment,** but after verifying in the **Comments** column, they were corrected.
4. In the **Overseas Country** column, for FY-23, all of the countries were abbreviated according to their **IATA** codes, and they were converted to full forms to increase the readability of the data.
5. In the **CW** column, the 0 values were reclassified as **Customs Clearance** under **Type of Shipment**, since this would indicate that the company only handled customs clearance and documentation for that shipment. During customs clearance, the overall cost of the commodity is used for billing and not its weight.
6. The **Sale Revenue** column was renamed as **Revenue** and, in the **Commodity** column, many categories were renamed for better representation.
7. **Uniform formatting** was applied for all columns and rows, which included font, color, spacing, etc., followed by removing **empty records** that had missing values.

Raw Data provided by the company

Clean Data for the analysis

Apart from this, the company also shared the overall revenue trend chart which is the total revenue from both streams i.e. **Nominated & Direct Shipments.** Below is the link to the chart:

Overall Revenue Trend Chart

The next step was to identify the key variables associated with the problem statement and to learn and research about the logistics and freight forwarding industry to understand industry trends and how the company can align itself to overcome its problem.

3 Metadata

The metadata associated with this dataset is as follows:

1. Name of the Excel Workbook: **Cleaned Sales Performance Data NNRIN**
2. Format of the Excel Workbook: **.xlsx**
3. Size of the Excel Workbook: **6.70 MB**
4. The workbook contains the following sheets:
    a. Sales_Consolidated_Data_FY-24: **5714 Rows x 10 Columns**
    b. Sales_Consolidated_Data_FY-23: **5001 Rows x 10 Columns**
    c. Descriptive_Statistics_FY-24
    d. Descriptive_Statistics_FY-23
    e. Preliminary Analysis
    f. Results for Mid-Term Report

After closely observing the data, many of the columns were hidden as they were irrelevant and would not contribute meaningfully to the analysis. The following columns were chosen as key variables that will be used to perform analysis:

1. **Office Branch**: This column represents the branches and sales offices of the company; **refer to table here (Table 1)**.
2. **Type of Shipment**: This column represents the type of shipment that the company handled; **refer to table here (Table 2)**.
3. **Overseas Country**: This column represents the country from/to which the goods are being collected/shipped.
4. **CW**: This column represents the chargeable weight of the shipment which is the max of (**GW**, **VW**) and is used by carriers to determine freight charges and helps in billing.
5. **Revenue**: This column represents the sale made by the company that is, each business transaction.
6. **Cost of Sale**: This column represents the cost induced by the company for the given business transaction.

7. **Gross Profit**: This column represents a company specific metric, known as gross profit which is the sum of **Profit (Revenue – Cost of Sale)** and **Additional Profit**.
8. **Commodity**: This column represents the type of goods in the given shipment.
9. **Type of Customer**: This column represents the type of customer; New and Existing customers.
10. **Quarter**: This column represents the quarter of the year during which the business transaction was performed.

After identifying the key variables, the next step was to perform descriptive statistics on the given data to better understand the basic features of the data by measuring central tendencies and variability.

4 Descriptive Statistics

There were 3 major numerical variables namely, **CW**, **Revenue**, and **Gross Profit**. The **Cost of Sale** column was excluded primarily because in the Freight Forwarding and Logistics Industry, costs are highly unpredictable and often depend on external uncontrollable factors like fuel, port charges, airline charges, customs duties, etc. Therefore, its insights would not be actionable. The following descriptive statistics were calculated across **shipment types** to deeply understand their central and variational tendencies:

1. **CW (Chargeable Weight):**
   - **1.1. Count of CW:** Across the 4 major types of shipments **(AI, AE, OI & OE)**, the total CW increased in FY-24 by **280 (4599=>4879),** indicating more business activities. The **AI** segment had the highest count in both years (**2141 => 2853)**. However, the **AE** segment had the lowest count in FY-24 **(593),** and the **OE** segment in FY-23 **(459)**. This indicates that the **AI** segment contributed the most to revenue, as CW is used for billing all shipments.
   - **1.2. Average of CW:** Across the 4 major types of shipments, the **AE** segment had the highest average CW, decreasing from **(812 Kg => 609 Kg)**. The **OE** segment had the lowest average CW in FY-24 at **4.44 Kg,** and the **OI** segment had the lowest average CW in FY-23 at **3.96 Kg**. This indicates that heavier shipments were frequently handled in FY-23 compared to FY-24.
   - **1.3. Standard Deviation of CW:** Across the 4 major types of shipments, the **AI** segment had the highest standard deviation in FY-24 at **625 Kg**, and the **AE**

segment had the highest in FY-23 at **626 Kg**. This high variability in CW indicates unpredictability in shipment weights. In contrast, the **OE** segment had the lowest standard deviation in both years **(4.63 Kg => 4.97 Kg),** suggesting consistent shipment weights.

2. **Revenue: Summary Tables 2A & 2B**
   - **2.1. Count of Revenue:** The count of revenue records increased in FY-24 by **713,** indicating more business activities. The **AI** segment had the highest revenue count in both years **(2141 => 2853)** whereas, the **CC-AE** segment had the lowest revenue count **(5 => 16).**
   - **2.2. Sum of Revenue:** The sum of revenue increased in FY-24 by **Rs. 5 Crores (Rs. 74 Crores => Rs. 79 Crores),** indicating growth. The **AI** segment was the top revenue-generating segment **(Rs. 27 Crores => Rs. 31 Crores),** and the **CC-AE** segment was the lowest **(Rs. 45 Lakhs => Rs. 17 Lakhs).** Despite higher sales in FY-24, a loss of almost **Rs. 2.60 Lakhs** in the **CC-AE** segment indicates it's the worst performing segment.
   - **2.3. Average of Revenue:** The average of revenue across all types of shipments declined by nearly **6%** indicating that the increase in the number of shipments handled may have lowered the average revenue per shipment, or that some of the segments had lower average contributions despite overall revenue growth. Notably, **LOG, OE & OI** segments have shown higher averages as compared to FY-23.
   - **2.4. Median of Revenue:** The sharp difference in median and average of revenue across all types of shipments in both years indicates the presence of outliers or extreme values, which have caused skewness. The **CC-AE** segment's median fell significantly **(Rs. 84,543 => Rs. 7,759).** On the contrary, the **OE** segment's median was higher, surpassing the **CC-OI** segment compared to FY-23.
   - **2.5. Range of Revenue:** The range of revenue increased for **AE, CC-OE & LOG** segments by considerable amounts, indicating greater variability in revenue, which could be due to outliers or extreme values. On the contrary, the **OI** segment's range has sharply declined by nearly **60%** which indicates improved consistency in revenue.
   - **2.6. Standard Deviation of Revenue:** The standard deviation of revenue for the **LOG** segment increased significantly by nearly **400% (Rs. 65,295 => Rs. 3.3 Lakhs),** indicating very high variability. Conversely, the **CC-OI** segment's

standard deviation declined by nearly **50%** indicating lower variability and consistency in revenue.

3. **Gross Profit: Summary Tables 3A & 3B**
   - **3.1. Sum of Gross Profit:** The overall sum of gross profit across increased in FY-24 by nearly **Rs. 1.8 Crores (Rs. 7.9 Crores => Rs. 9.7 Crores),** indicating good profit turnover for the company. The **AI** segment was the most profitable **(Rs. 3.5 Crores => Rs. 4.3 Crores),** which is an increase by nearly **24%**. The **CC-OE** segment was the least profitable in FY-23 **(Rs. 51,319)** and the **CC-AE** segment was the least profitable in FY-24 **(Rs. 84,532)**. This aligns with low revenue observed for the **CC-AE** segment in FY-24.
   - **3.2. Average of Gross Profit:** The average of gross profit across all the types of shipments rose by nearly **7%** indicating that the average profit per shipment has increased due to an increase in the number of shipments handled. Notably, the **LOG** and **OI** segments have shown higher averages as compared to FY-23, while the **CC-AI** segment consistently remained the lowest, indicating low profitability for the company.
   - **3.3. Standard Deviation of Gross Profit:** The standard deviation of gross profit of the **LOG** segment increased tremendously by nearly **500% (Rs. 5658 => Rs. 37,110),** indicating a very high variability in profits generated within this segment. Conversely, the **OE** segment's standard deviation decreased by nearly **32%,** reflecting lower variability and good consistency in profits.

Checking CW, Revenue and, Profit across shipment types helped to understand how each of these variables behaves. With the above facts in mind, it can be easily concluded that the Freight Forwarding and Logistics business is quite volatile and unpredictable in nature; the measure of spread for all the variables strongly supports this. The next step was to perform preliminary data analysis on the dataset to find early trends and patterns that would aid in finding the solution to the problem.

5 Preliminary Data Analysis

The preliminary analysis has been divided into two categories based on the causes outlined in the problem statement. The data-related problems are addressed in the quantitative section, while qualitative problems, such as marketing, CRM, and the company's online presence, are addressed in the qualitative section.

5.1 Quantitative Analysis

Quantitatively, the following analysis techniques were used to understand trends and gain early insights:

1. **Trend Analysis**: This is a type of analysis technique that is used to examine data over a continuous period of time to identify patterns, shifts, or changes. This helps to understand whether a variable like Revenue is increasing/decreasing/stagnant over time periods like quarters in a year. For this project, since the company is facing stagnancy in revenue, variables like Revenue and Gross Profit were analyzed to check their behavior across quarters for both years.
2. **Segment Analysis**: This is a type of analysis technique that is used to divide data into smaller groups called segments /categories to evaluate each segment's performance. This provides insights to understand which segments are performing well and which are underperforming, allowing the decision makers to take strategic decisions. For this project, columns like Office Branch, Overseas Country, Type of Customer, Commodity, and Type of shipments are segments across which variables like Revenue and Gross Profit were measured to evaluate their performance and gain useful insights. Apart from this, the insights found during descriptive statistics were also addressed and used in this analysis to relate and find interesting insights and patterns.
3. **Ratio Analysis**: This is a type of analysis technique that is used to examine a company's financial health by finding financial ratios from data such as Revenue, Cost of Sale, and Profit. Ratios like Profit Margin, Gross Margin %, etc., help to determine the company's performance, efficiency, profitability, and overall financial health. For this project, even though the overall revenue of the company is facing, stagnancy which includes both Nominated and Direct Shipments, the following ratios were calculated to evaluate performance in Direct Shipments:

Ratio	Formula	Purpose
Profit Margin (%)	$\frac{Total\ Profit}{Total\ Revenue} \times 100$	Indicates overall profitability and margin pressure (reduction in profit).
Cost-To-Revenue Ratio (%)	$\frac{Total\ Cost}{Total\ Revenue} \times 100$	Shows cost management efficiency relative to revenue, higher ratio would indicate high

		market pressure leading to tight margins.
Revenue Growth Rate (%)	$\frac{Revenue_{FY-24} - Revenue_{FY-23}}{Revenue_{FY-23}} \times 100$	Indicates revenue earned per CW (shipment weight) reflecting pricing efficiency and revenue quality relative to shipment sizes.

5.2 Qualitative Analysis

Qualitatively, the company's current practices for marketing, CRM (Customer Relationship Management), and online presence had to be first collected, and then analyzed to measure their efficiency and how they can be improved or replaced with better ones to overcome the stagnancy in revenue. The facts collected are stated in the next section below.

6 Results and Findings

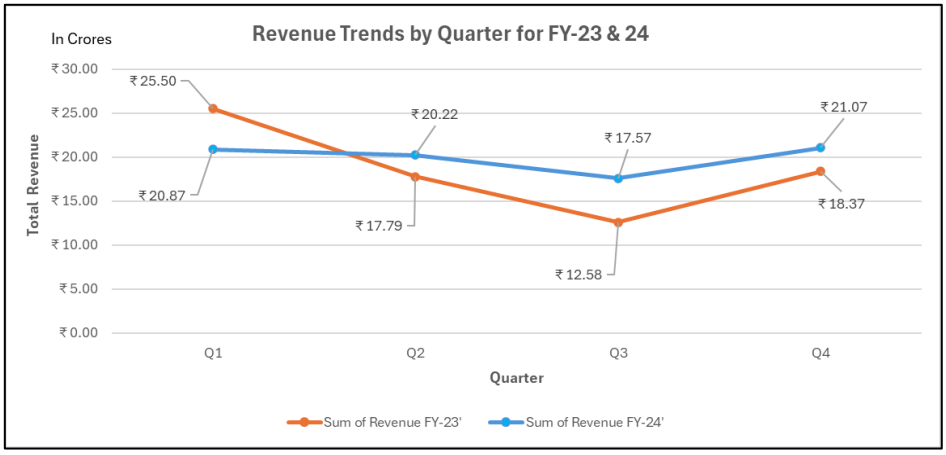


Chart 6.1

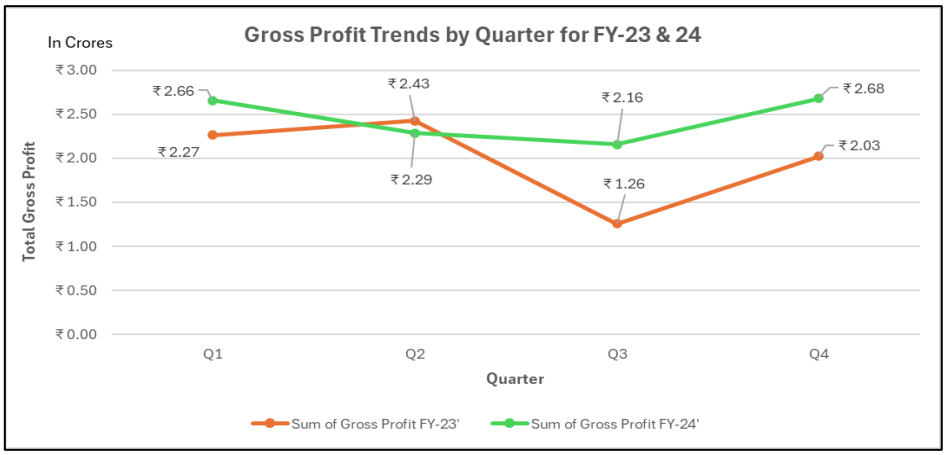


Chart 6.2

1. **<u>Trend Analysis (Charts 6.1 & 6.2)</u>**: After performing trend analysis for revenue and gross profit, a clear dip in revenue and gross profit in 3rd quarter for both years was observed. Overall, FY-24's Trends were still, and FY-23's Trends were quite

fluctuating, specifically in the 3rd Quarter. These trends will now be further analyzed in-depth across segments to find where exactly is the company losing revenue.

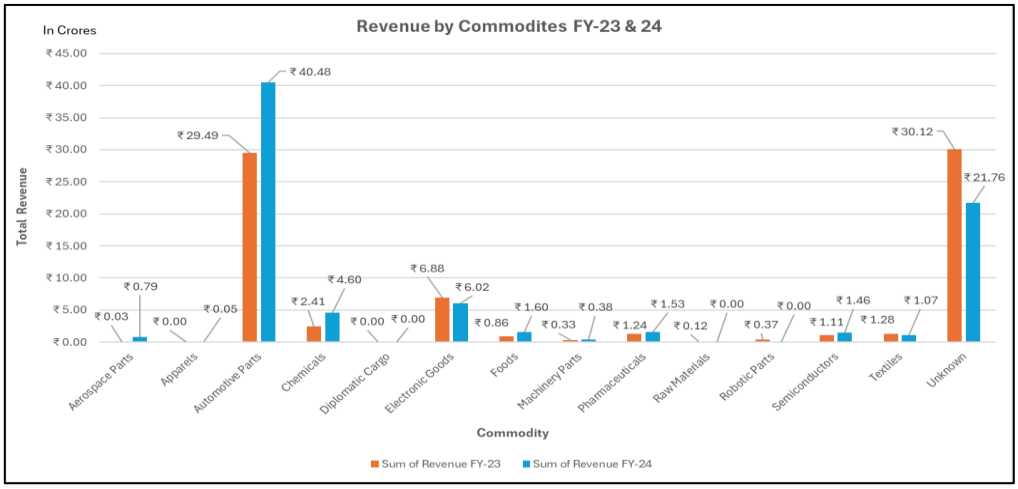


Chart 6.3

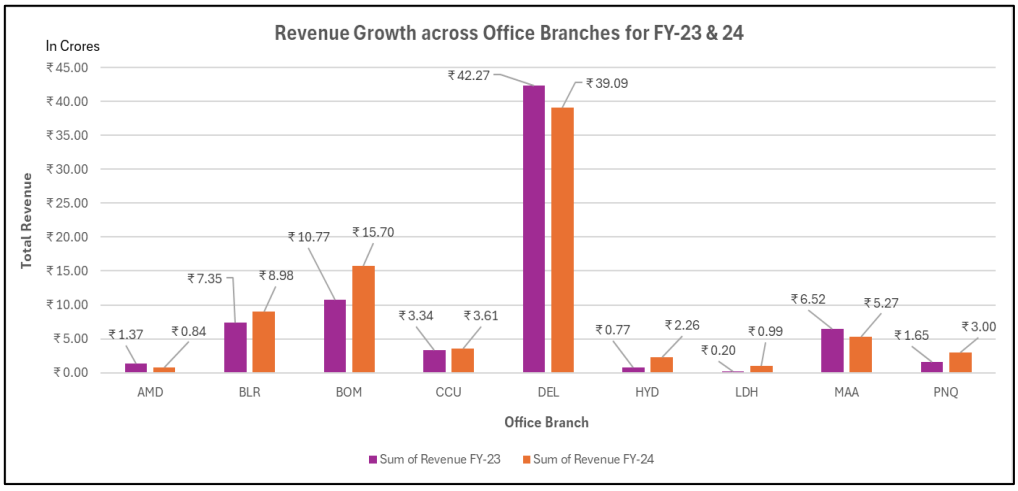


Chart 6.4

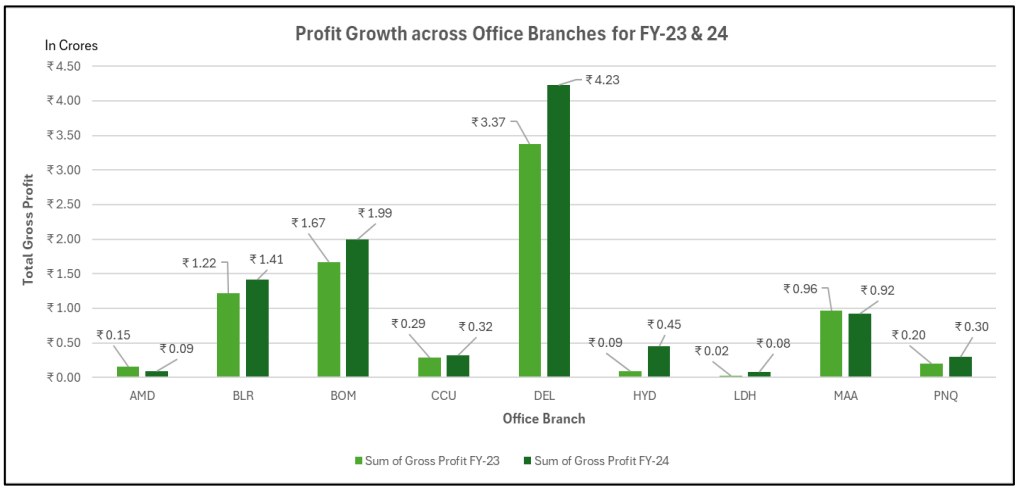


Chart 6.5

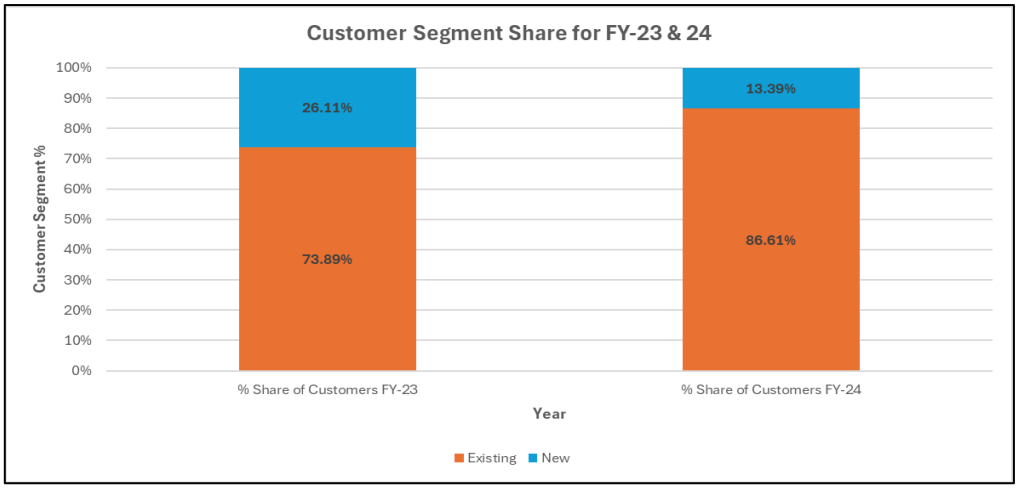


Chart 6.5

Country	Sum of Revenue FY-23
Japan	₹ 252,995,917.82
Australia	₹ 97,928,154.60
China	₹ 91,888,000.51
Malaysia	₹ 40,873,007.79
United States of America	₹ 35,546,956.19
Czech Republic	₹ 47,850.00
Mauritius	₹ 45,000.00
Finland	₹ 34,009.00
South Africa	₹ 19,001.00
Sweden	₹ 8,208.00

Country	Sum of Revenue FY-24
Japan	₹ 293,308,156.36
China	₹ 116,690,315.60
Malaysia	₹ 64,247,232.76
United Kingdom	₹ 34,503,376.54
United States of America	₹ 29,450,298.66
Jordan	₹ 50,160.00
Colombia	₹ 49,017.00
Argentina	₹ 30,327.00
Ecuador	₹ 14,453.00
Serbia	₹ 11,343.00

Country	Sum of Gross Profit FY-23
Japan	₹ 34,367,337.24
China	₹ 8,538,132.48
United Kingdom	₹ 5,000,808.68
Germany	₹ 3,992,089.98
Thailand	₹ 3,422,318.09
Domestic	₹ 4,460.00
Burundi	₹ 3,339.50
Czech Republic	₹ 2,200.00
South Africa	₹ 746.00
Sweden	₹ 495.00

Country	Sum of Gross Profit FY-24
Japan	₹ 45,152,530.51
China	₹ 11,953,643.52
United Kingdom	₹ 6,311,322.68
Australia	₹ 4,202,403.66
United States of America	₹ 4,172,574.03
Colombia	₹ 5,718.00
El Salvador	₹ 4,414.60
Serbia	₹ 2,133.00
Ecuador	₹ 441.00
Algeria	-₹ 903.00

Table 6.7

2. **<u>Segment Analysis (Charts 6.3, 6.4, 6.5, 6.6 & Table 6.7):</u>** After performing segment analysis, **Chart 6.3** indicates the revenue by commodities, where the highest performing segment was **Automotive Parts,** followed by **Unknown** for both years. This indicated a huge problem regarding data accuracy and data entry since so much of the data was not properly categorized and hence was marked **Unknown**. This indicates that the company needs a proper ERP system. **Charts 6.4** and **6.5** indicate the revenue and gross profit by office branch for both years, where the top performing branch was the **Delhi Branch,** followed by **Mumbai Branch, Bengaluru Branch,** and **Chennai Branch,** for both years, for revenue and gross profit. This cross-verified the earlier insight in the descriptive statistics section, where **AI** shipments contributed the highest to revenue and gross profit. Since Delhi is India's capital and is the hub for **AI** and **AE** shipments, the company's **Delhi Branch** is the best performer. **Chart 6.6** shows the Customer Segment share for both years, where surprisingly the percentage of new customers reduced by almost **48%**, indicating that the company

provided fewer services to newer customers in FY-24 and more to older customers. Finally, **Chart 6.7** shows the top and bottom performing countries in terms of revenue and gross profit, where **Japan** was the top country both years for both variables. This was observed and stated in the proposal report that the company mainly provides services in the Japanese Trade Lane. **Algeria** in FY-24 gave negative profit (loss) to the company, which could indicate operations mismanagement (documentation & billing) leading to loss.

3. **Ratio Analysis (Chart 6.8)**: After performing ratio analysis, it was found that the company's **profit margins** increased, which indicated that even after stagnancy in revenue for 5 years, the company managed to stay profitable in **Direct Shipments**. **The cost-to-revenue ratio** also decreased since the revenue of the company increased in FY-24 **(7.4%** as found in **Revenue Growth Ratio)**. This indicates that the company increased its revenue in FY-24, which was observed in the descriptive statistics section as well. These ratios prove that the company actually increased its revenue, but did not do so well in **Nominated Shipments**, which is visible in the overall revenue trend chart given by the company. This proves that the company is facing stagnancy, but in Nominated Shipments and not Direct Shipments, since the company can only control direct shipments, the only way to break this stagnancy is by increasing revenue in direct shipments only.

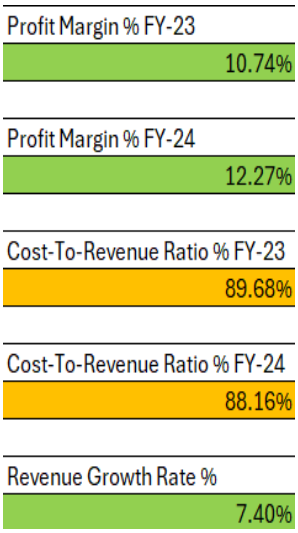


Chart 6.8

4. **Quantitative Analysis:**
   a. The company does not have a proper, dedicated ERP (Enterprise Resource Planning) system in place. An ERP system covers many business functions like Operational Management, Quotation and Pricing Management, Customs Documentation, Customer Relationship Management (CRM), etc. Currently, the company does not have a comprehensive ERP system to manage these functions, and rather, manages all of them in a separate manner across the office branches and then consolidates them during quarterly and yearly reviews. This has many downsides, out of which Data Inaccuracy and Errors were strongly observed during data cleaning and preprocessing.

b. Also, without an ERP system, customer relationship management is not properly managed, which is a major downside and will be further investigated and worked upon in the final stage.
c. The company's website, www.nnrglobal.com, acts as a global website for all company branches across the world. Within India, the website gets almost **14% traffic** which is second-highest after the USA. This indicates that in India, people are searching for the company and its services but not by huge margins. Also, the company does not market itself in India through this website. This is a downside as the visibility of the company is only focused on the offline channels, primarily through sales and seminars.

To conclude, these early trends and patterns provided a lot of insights and will serve as the foundation for conducting in-depth analysis for the final report, to draft a proposed solution to the company's problem of stagnancy in revenue.