

# **Supply Chain Analysis: Case Study**

**Data Analyst case study on Supply Chain Analysis  
using Excel**

**Supply Chain Analysis of Fashion and Beauty startup**

**Data Analyst**

**Aare Adegboyega Waris**

**Twitter:** <https://twitter.com/eraaeda>

**LinkedIn:** <https://www.linkedin.com/in/aareadegboyega/>

**GitHub:** <https://www.github.com/misteraare>

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## **Introduction**

Supply chain analytics plays a crucial role in driving data-driven decision-making across industries, including manufacturing, retail, healthcare, and logistics. In this report, we present an analysis of a Fashion and Beauty startup's supply chain data, specifically focused on the movement of makeup products. By collecting, analyzing, and interpreting this dataset, we aim to gain insights that can inform strategic decisions and optimize the supply chain operations.

## **Dataset Overview**

The dataset comprises various features related to the Fashion and makeup product supply chain. These features provide valuable information for understanding the flow of products from suppliers to customers. The following features are included:

1. Product Type
2. SKU
3. Price
4. Availability
5. Number of products sold
6. Revenue generated
7. Customer demographics
8. Stock levels
9. Lead times
10. Order quantities
11. Shipping times
12. Shipping carriers
13. Shipping costs
14. Supplier name
15. Location
16. Lead time
17. Production volumes
18. Manufacturing lead time
19. Manufacturing costs
20. Inspection results

- 21. Defect rates
- 22. Transportation modes
- 23. Routes
- 24. Costs

## **Supply Chain Analysis using Excel**

The supply chain represents a network of interconnected processes involved in the production and delivery of goods to customers. Analyzing the various components of a supply chain is crucial for identifying opportunities to enhance its effectiveness and generate greater value for customers. This article aims to provide guidance on conducting supply chain analysis using Excel, equipping data analysts with valuable insights into optimizing supply chain operations.

### **Dataset Source**

To perform a supply chain analysis on a company, it is crucial to gather data related to various stages of the supply chain. This includes information about sourcing, manufacturing, transportation, inventory management, sales, and customer demographics.

Fortunately, I have come across an excellent dataset that provides comprehensive data about the supply chain of a Fashion and Beauty startup.

In the following section, I will guide you through the process of conducting a supply chain analysis using the Excel programming language.

### **Dataset Analysis using Excel**

The first step is to import the file into Excel.

After importing the file, the next task is to remove any duplicate entries. To do this, you can select all the data by clicking on cell A1 and then pressing Ctrl+A. Then go to the "Data" tab and choose "Remove Duplicates" under the "Data Tools" section. Once duplicates are removed, the next step is to filter the data to identify any spelling errors or unwanted names. To do this, you can click on the "Filter" tool under the "Sort & Filter" section. While filtering, you may notice that some entries under the "Customer Demographics" category are labeled as "Unknown" instead of specific demographics. Since we won't be using this data, you can proceed with the existing information. At this stage, the data cleaning process is considered complete, and you can move on to the next steps.

To facilitate further analysis, it is recommended to convert the data into a table. You can achieve this by selecting the entire data range (Ctrl+A) and then pressing Ctrl+T to convert it into a table. The next step is to create a pivot table. Navigate to the "Insert" tab and select the "PivotTable" tool. Choose the location for the pivot table (such as a new worksheet) and specify the data range (Table 1 or the relevant table name). Once the pivot table is created, you can format the numbers to display as whole numbers and remove any decimal places for better readability.

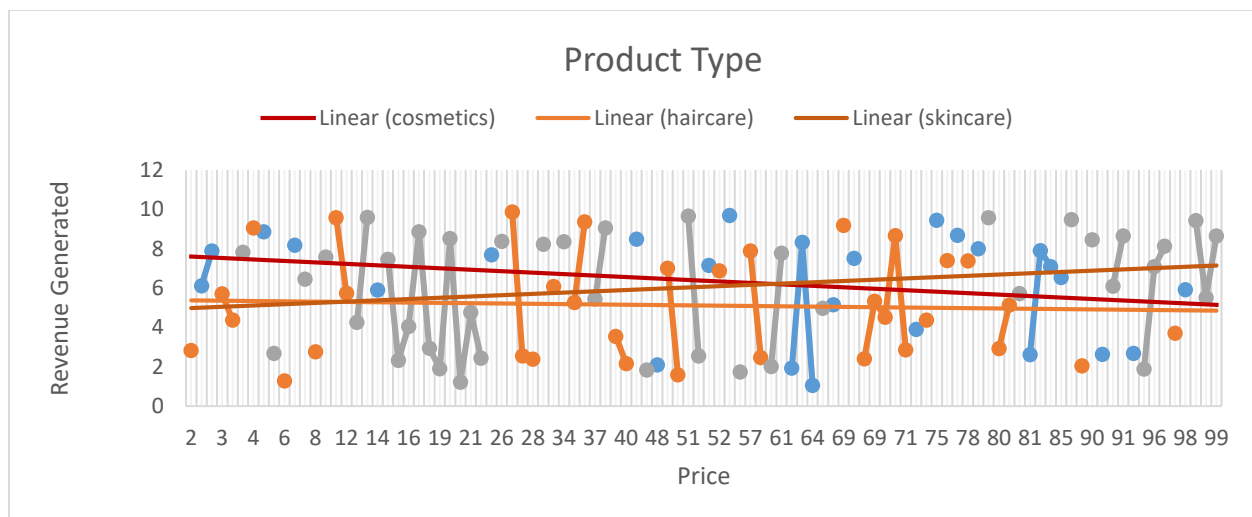
A. Now, you are ready to analyze the data and provide insights based on the following requirements or objectives.

Let's begin the analysis of the Supply Chain by examining the correlation between product prices and the corresponding revenue they generate.

Drag fields between areas below:

<b>▼ FILTERS</b>	<b>      LEGEND (SERIES)</b>
	Product type ▼
<b>≡ AXIS (CATEGORIES)</b>	<b>Σ VALUES</b>
Price ▼	Sum of Revenue gen... ▼

☐ Defer Layout Update UPDATE

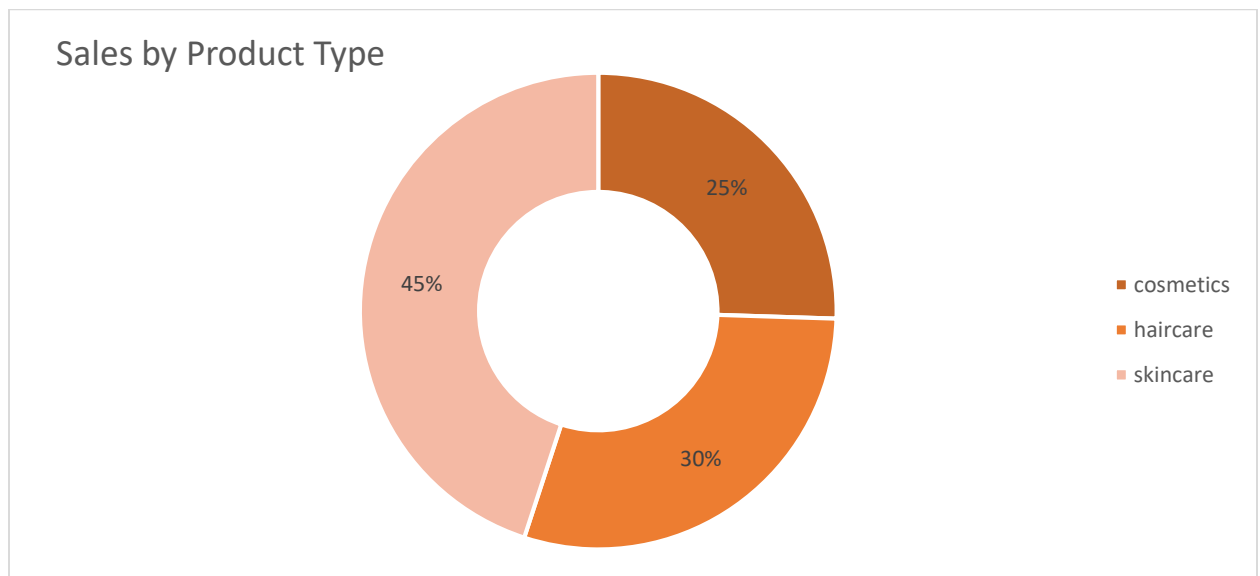


Therefore, the company generates a higher revenue from skincare products, and there is a positive relationship between the price of skincare products and the revenue they generate.

B. Now, let's examine the sales based on different product types.

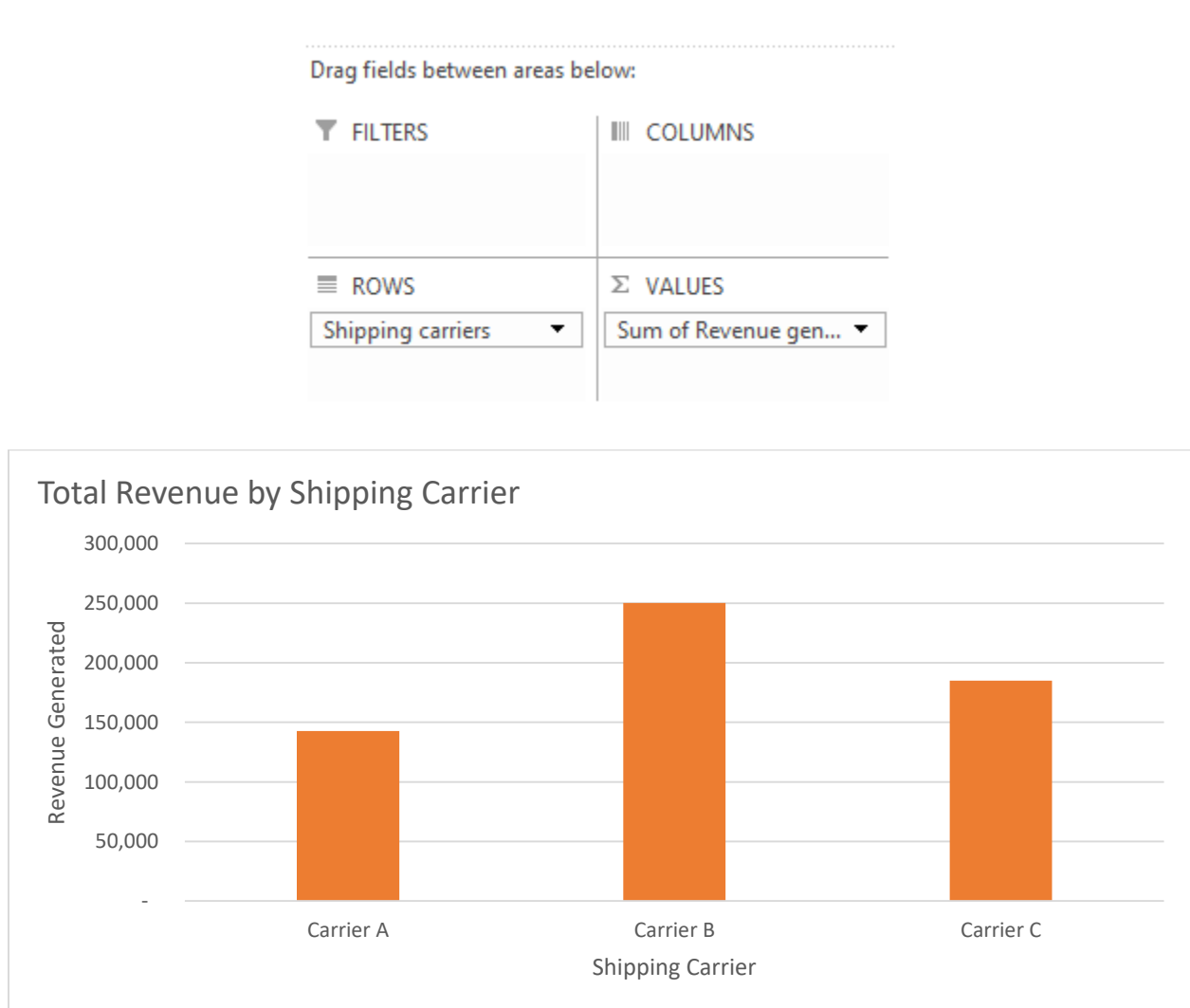
Drag fields between areas below:

FILTERS	COLUMNS
ROWS	VALUES
Product type ▼	Sum of Number of p... ▼



Skincare products account for 45% of the company's business, while haircare products contribute to 29.5% of the revenue, and cosmetics make up 25.5% of the total sales.


C. Now, let's analyze the total revenue generated from shipping carriers.



The company utilizes three shipping carriers for transportation, and among them, Carrier B contributes significantly to the company's revenue generation.



D. Now, let's examine the average lead time and average manufacturing costs for all products of the company.





Product Price 	Average of Lead times	Average of Manufacturing costs
cosmetics	15.385	43.053
haircare	15.529	48.458
skincare	16.700	48.993
<b>Grand Total</b>	<b>15.960</b>	<b>47.267</b>

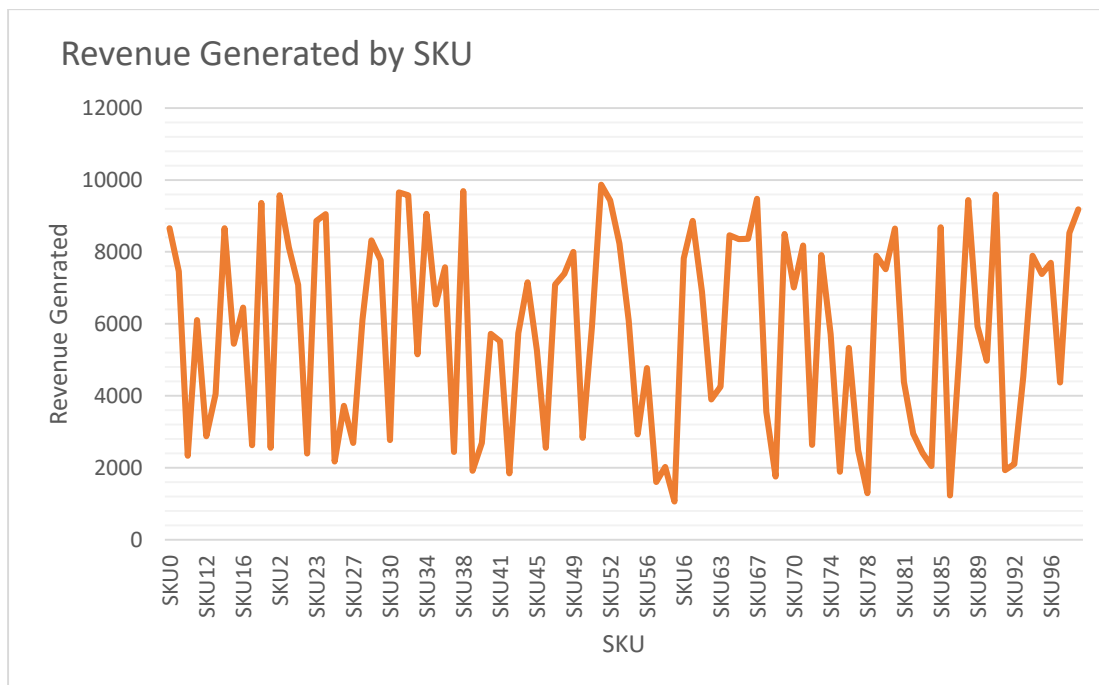
## Analyzing SKUs

In the dataset, there is a column labeled as SKUs, which stands for Stock Keeping Units. SKUs are unique codes assigned to products to facilitate inventory management and tracking. They serve as a means to identify and differentiate individual items, ensuring accurate monitoring of stock levels. For instance, in a toy store with a diverse range of toys, each toy would be assigned a unique SKU as a secret number known only to the store, enabling efficient inventory control.

A. Now, let's analyze the revenue generated by each SKU.

Drag fields between areas below:





 FILTERS	 COLUMNS
 ROWS	 VALUES
SKU ▼	Sum of Revenue gen... ▼

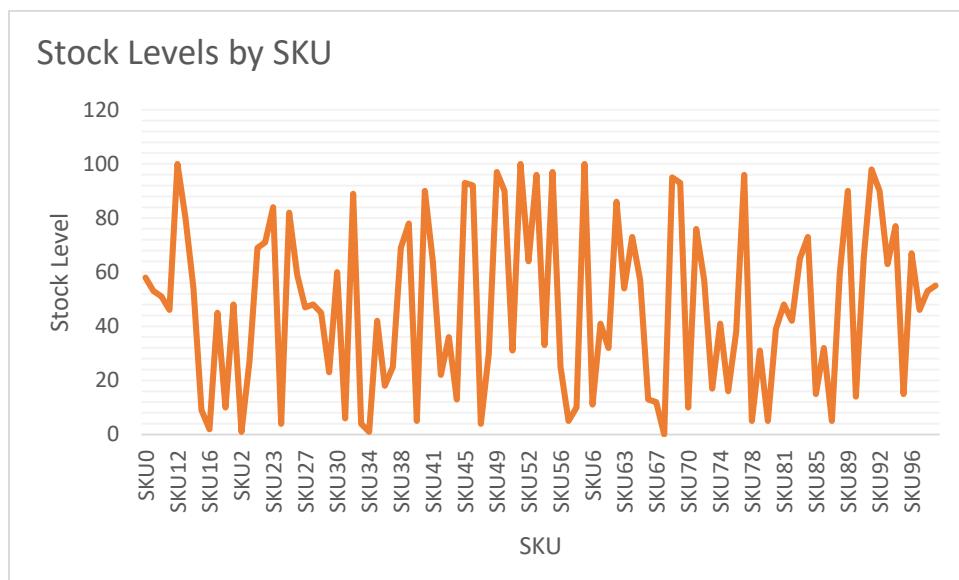


Another column in the dataset is labeled as Stock levels. Stock levels indicate the quantity of products available in a store or business's inventory at a given time

B. Now, let's examine the stock levels of each SKU.

Drag fields between areas below:

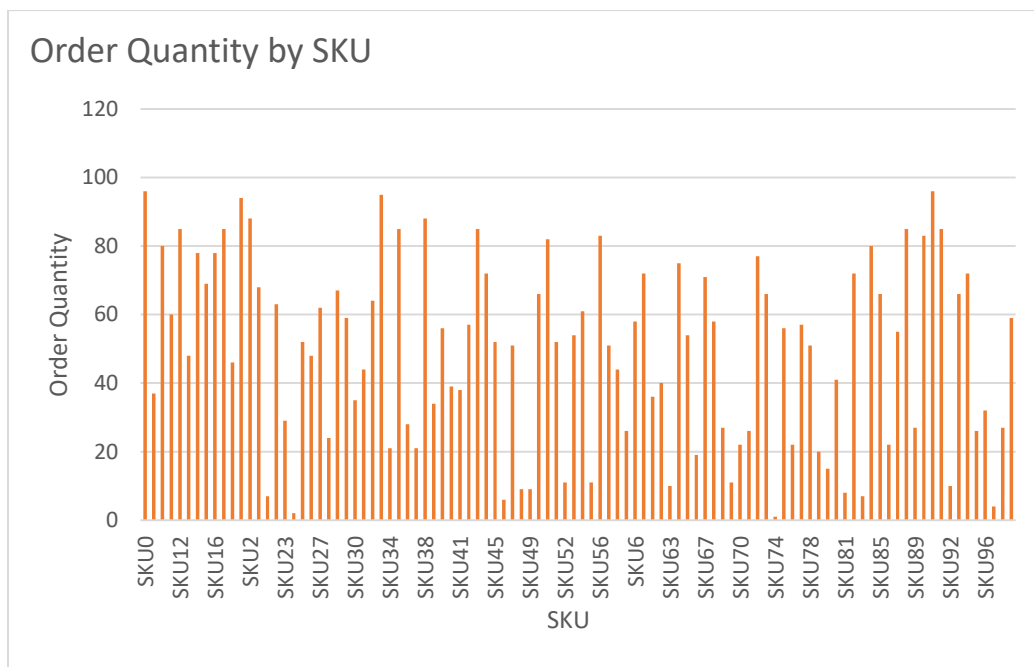
 FILTERS	 LEGEND (SERIES)
 AXIS (CATEGORIES)	 VALUES
SKU ▼	Sum of Stock levels ▼



C. Now, let's analyze the order quantity of each SKU.

Drag fields between areas below:

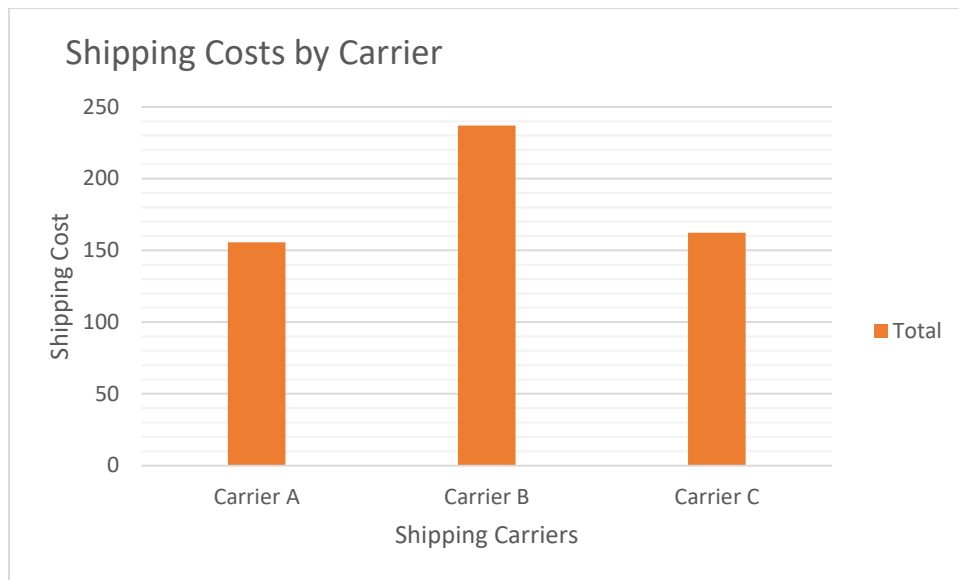
<p><b>FILTERS</b></p>	<p><b>COLUMNS</b></p>
<p><b>ROWS</b></p> <p>SKU ▼</p>	<p><b>VALUES</b></p> <p>Sum of Order quantit... ▼</p>



## Cost Analysis

A. Now, let's analyze the shipping costs associated with different carriers.

Product Price ▾	Sum of Shipping costs
Carrier A	156
Carrier B	237
Carrier C	162
Grand Total	555

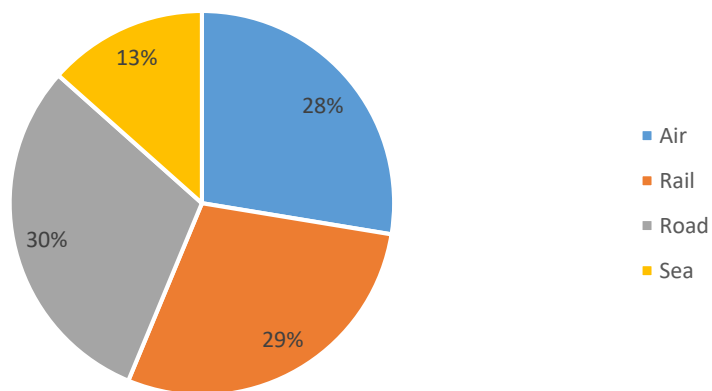


The above visualizations revealed that Carrier B contributes significantly to the company's revenue. However, it is also the most expensive carrier among the three options.

B. Now, let's examine the distribution of costs by transportation mode.

Product Price ▾	Sum of Costs
Air	14605
Rail	15169
Road	16048
Sea	7103
<b>Grand Total</b>	<b>52925</b>

Cost Distribution by Transportation Mode



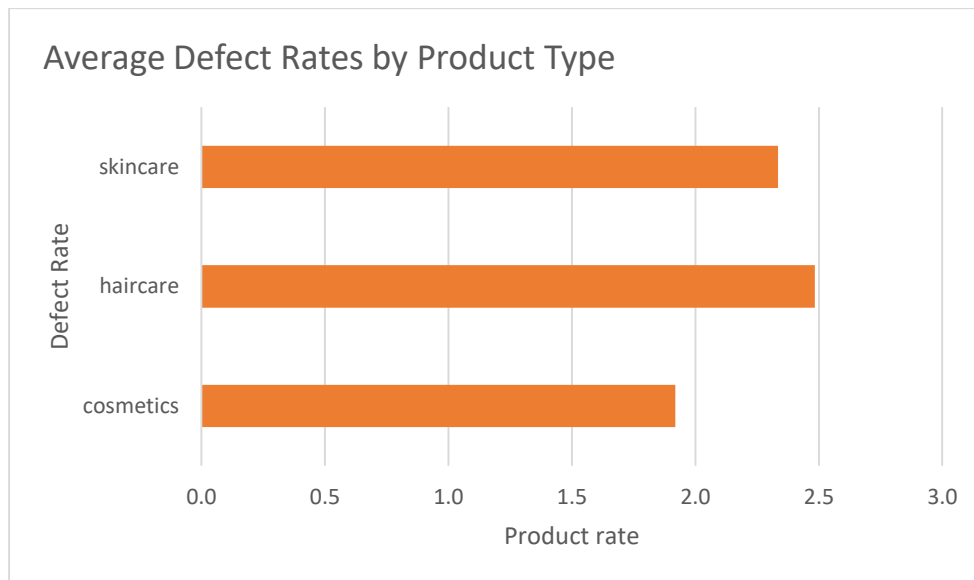
The company allocates a larger portion of its transportation expenses to the Road and Rail modes for the transportation of goods.

## Analyzing Defect Rate

The defect rate in the supply chain refers to the percentage of products that are found to have issues or are damaged after being shipped.

A. Now, let's analyze the average defect rate across all product types.

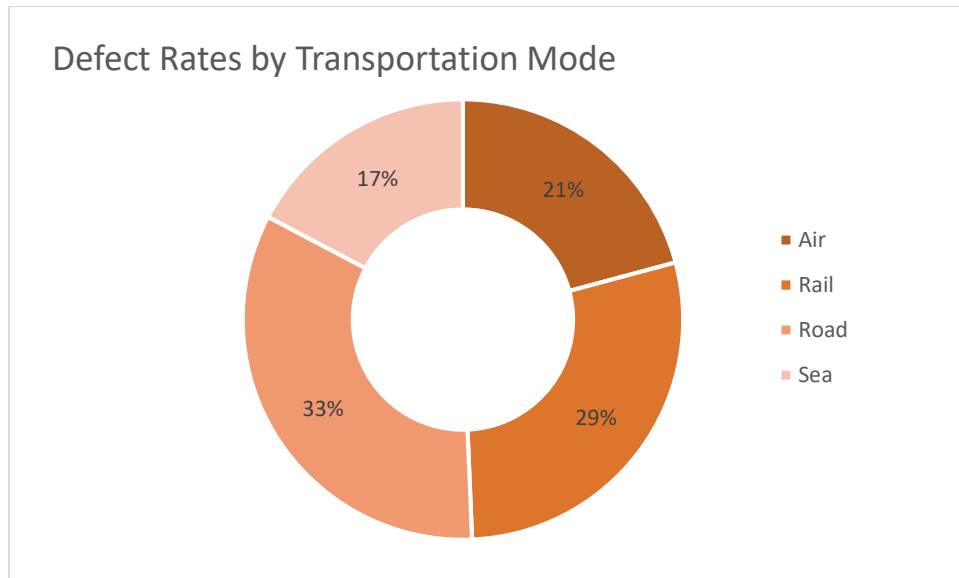
Product Price ▾	Average of Defect rates
cosmetics	1.9
haircare	2.5
skincare	2.3
Grand Total	2.3



Haircare products have a higher defect rate compared to other product types.

B. Now, let's examine the defect rates based on the mode of transportation.

Product Price ▾	Sum of Defect rates
Air	20.8%
Rail	28.5%
Road	33.4%
Sea	17.3%
Grand Total	100.00%



Road transportation exhibits a higher defect rate, while Air transportation demonstrates the lowest defect rate. This showcases how Excel programming language can be utilized to analyze a company's supply chain.



## **Summary**

Supply Chain Analysis involves examining different aspects of a supply chain to identify areas for improvement and enhance the overall efficiency of the supply chain, ultimately delivering greater value to customers. This article provided an overview of conducting a supply chain analysis using Excel, highlighting key steps and techniques. If you have any questions or would like to contribute further insights, please feel free to ask in the comments section below.