**DATA VISUALIZATION (DSCI 5360.008)**

**FINAL PROJECT EXECUTIVE REPORT**

**On**

DATACo: Smart Supply Chain Management Analysis

**Submitted By:**

**GROUP-16**

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**INTRODUCTION:**

DATACo Global is one of the largest independent Data and Information Management Service companies to the global upstream Oil and Gas industry. It is found in 2001, the company has provided wide services and solutions to many of the leading exploration and production companies. Generally, an E&P company finds and extracts raw materials used in a business. The company’s main goal is to focus on the Upstream Oil & Gas, and it offers their clients to use locked-in products or cross-industry generic solutions provided by the multi-industry service companies. They seek to build a long-term business relationships built on quality, reliability, and trust. It is an UK based company and has around a hundred employees in it. In short Supply Chain Management is the set of activities that can be done by an organization to deliver goods and raw materials to the customers.

Supply chain management is the processing of the entire production flow of a product or service. This is from raw materials to delivery of the final product to the consumer. A typical Supply Chain Management works in 5 phases – Planning, Sourcing, Manufacturing, Delivery and Logistics, and Returning. Normally, SCM seeks to centrally control or link the production, shipping, and distribution of products. By managing the supply chain, businesses can reduce excessive costs and deliver products to consumers faster. This is done by more tightly controlling the company's internal inventory, internal production, distribution, sales, and inventory held by the company's suppliers.

**DATASET DESCRIPTION AND RELATED WORK:**

Original Dataset Source: <https://www.kaggle.com/datasets/shashwatwork/dataco-smart-supply-chain-for-big-data-analysis>

The dataset that we got from the above website was too large for us to operate on in, Tableau So we went ahead and transformed the dataset by removing some unwanted columns like passwords, descriptions, address, and image links. And reduced the number of records because the original file consisted of almost 181,000 so we thought of reducing them to 10,000 randomly so that the analysis won’t be affected.

Some of the most useful features that are important are the Sales, Profit, Shipping, and Segments. Because they are the most important parts of any Supply Chain Management Company.

Graphical user interface, application, table, Excel

Description automatically generated

Fig: A snip of the reformed dataset.

**RESEARCH PROBLEM/ISSUES:**

We would like to first analyze and visualize the dataset to know and find any possible patterns in the dataset to establish a relation. We have found few research questions/issues on the data, and we are trying to visualize them by creating Tableau sheets, dashboards, and story.

Some questions we would like to ask ourselves while analyzing and visualizing are:

1. How are the Sales and Profits related based on the Sales in each department? And which Countries have the highest sales, and which have the lowest?

2. Within each segment type how are the sales distributed and do they have any profits? How much profit depending on the Order profit Ratio?

3. Which kind of transaction are made in the different regions and is there any scope to provide any offers or discounts based on that?

4. During the Shipping time how many were shipped in time and how many are shipped early and how many are shipped late? Does it affect the profit or sales in anyway?

5. Depending on the Shipping mode of the Order how is the profit changed?

**EXPLORATORY DATA ANALYSIS ON THE DATA USING TABLEAU:**

1.How are Sales and Profits related based on the Sales in each Department? And which Countries have the highest sales, and which have the lowest?

When the Sales is calculated by the Department and the Customer Segment the highest is found with the Fan Shop and the least number of sales is by the Book Shop.

But when coming to the Profit it is not the same the Highest profits are found in Apparel and the least profits in fact there is a loss of -1.5 in the Pet Shop.

**Chart, waterfall chart

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The highest number of sales were done by the country Estados Unidos by a sale of 247,769. Here the interesting fact is that even though some countries are larger in capacity they have a smaller number of sales comparatively.

**Graphical user interface, application, map

Description automatically generated**

2. Within each segment type how are the sales distributed and do they have any profits? How much profit depending on the Order profit Ratio?

The Maximum sales are found in the Consumer Section with 917,531 and the least in the Home Office. The same trend was found in Profits also there were more profits for the Consumer and less for the Home Office.

**Chart

Description automatically generatedChart

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With a Order Profit Ratio of 170.3 the Apparel from Consumer is the highest one out the rest of them.

**Chart, bar chart

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3. Which kind of transaction are made in the different regions and is there any scope to provide any offers or discounts based on that?

Out of all the Possible Payment methods most of the transactions were made as DEBIT and Pacific Asia is the one with highest number of transactions.

Timeline

Description automatically generated with medium confidence

And Compared to the other regions Africa is a little backed up We think that maybe promoting more and creating awareness over there might increase the transactions over there.

4. During the Shipping time how many were shipped in time and how many are shipped early and how many are shipped late? Does it affect the profit or sales in anyway?

It is noticeable that only 50% of the real days of Shipment are being done as scheduled the rest of them are extra. And the Advance shipping is doing good and The Shipping on time is same as scheduled there is no delay in the estimated time for the Delivery.

Maybe if the Company tries to improve the Delivery for the Late Shipping, then people might trust and continue to shop more later.

Graphical user interface, application

Description automatically generated

5. Depending on the Shipping mode of the Order how is the profit changed?

Yes, it is true that the Shipping mode has a control on the benefits that an order can get. If you observe in the corporate section, the Standard Class Shipping gathers more benefits almost equal to 66,000. On an average out of all the Shipping Modes the Standard Class has more benefits than others. The least benefits are from the Same Day Shipping. Maybe it is because most of them charge for a same day shipping and people may not be willing to pay extra for delivery sometimes.

**Chart

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**DASHBOARDS:**

We have created three dashboards:

One for the Comparison of the Sales and the Profits of the Company based on the Department Name sorted by the Customer Segment and a direct comparison of the Sales and the Profits. It shows that the average order item discount is approximately 21.7 and the average benefit per order is 15. The maximum profit for the department was for the Apparel. And the maximum sales by department is for the Fan shop.

**Chart, box and whisker chart

Description automatically generated with medium confidence**

The second one is for the Profits and Sales by the Segment of the Customer There are three Segments- Home Office, Consumer, and Corporate. Out of the three most of the Sales and Profits are seen by Consumer only.

**Graphical user interface, application

Description automatically generated**

The Third dashboard is for the Sales by the Type of the Market and the payment type and the Department also. The Type is the type of the transaction that has been made by the customer it can be cash, debit, transfer, or other.

**Graphical user interface

Description automatically generated**

**STORY: ANALYSIS ON DATACO GLOBAL’S SUPPLY CHAIN MANAGEMENT**

Showing the comparison between the sales and profit of the company with respect to the Department. We created a story of total 6 sheets which are combination of sheets and dashboards.

**Chart, box and whisker chart

Description automatically generated**

There are three Segments for the Customer, visualizing Sales, and Profits for them. The greatest number of sales were found with the Consumer and the highest profits of 917,531 and 100,187 simultaneously. The Least sales and profits are for the home office.

**Graphical user interface, application

Description automatically generated**

There are different types of Payment Types and Analyzing the Number of Sales for each of them by the Market Region. Most of the transaction are done using the debit and the least are done using cash. Depending on the region Africa has to improve a lot.

**Graphical user interface

Description automatically generated**

This Board shows us the Comparison between the number of days for the real shipping and the scheduled shipping days and the number of sales by the status of the order.

**Graphical user interface

Description automatically generated**

The Overall Sales and Profit of the DATACo Global Company. Out of the three years that the Company was running the Sales was a little low at the beginning of the year but later it showed a hike.

**Graphical user interface, application, Word

Description automatically generated**

**DISCUSSION:**

After looking at all the charts we can understand that the company has a few ups and downs from the first hypothesis we have seen that even though the sales were high sometimes the profits may not be increasing instead they might even go down. From the second one we understand that number of profits depend on the order profit ratio, and they can have an impact on the entire data analysis. Form the next one we can say that since most of the transactions were made using a debit, we can choose the way we want to see it we can either increase the number of people that pay by using debit by giving them some occasional discounts or attract new customers of other payment methods by giving them signup offers. This way we can improve that sales of the company. Note that only 50% of the actual shipping date runs as planned and the rest are additional. In addition, advance shipping is proceeding smoothly, scheduled shipping is on schedule, and there is no delay in scheduled delivery. If the company tries to improve the delivery of delayed shipments, people may be able to trust and continue shopping later. From the last hypothesis we understand that the shipping mode controls the benefits that an order can receive. Observing in the enterprise area, standard-class delivery collects more benefits, equivalent to nearly 66,000. On average for all shipping methods, the standard class has many advantages over other classes. The smallest advantage is same-day shipping. Maybe that's because most of them charge same-day shipping charges, and sometimes people aren't willing to pay extra for delivery.

**REFERENCES:**

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