Northern Illinois University

OMIS 661

BUSINESS INTELLIGENCE APPLICATIONS & TOOLS

Final Project Report

Submitted to: Dr. Chang Liu

Submitted by

Team 10

Anusha Kokkinti – Z1856785

Bharat Nanduri – Z1859004

Date: 4th May 2020

Table of Contents

EXECUTIVE SUMMARY

In the on-going business, all its customers are currently based in the United States, and the company is intending to push for expansion into other countries. For that WWI must review its current financing options, present and future demands about the products, customer behavior, sales, revenue, profits and losses and the operational efficiencies.

The newly deployed BI team is tasked with analyzing the available data, provide the valuable findings, opportunities and recommendations that will assist the company in planning for expansion. The team extensively used BI, to locate the operational inefficiencies, find opportunities to generate revenue, and these are discussed in this report.

Introduction

Wide World Importers (WWI) is a wholesale novelty goods importer and distributor operating from the San Francisco bay area. As a B2B business, WWI's buyers are mostly companies who resell to individuals. It sells to retail customers across the United States including specialty stores, supermarkets, computing stores, tourist attraction shops, and some individuals. It also sells to other wholesalers via a network of agents who promote the products on the company’s behalf.

WWI buys goods from suppliers including novelty and toy manufacturers, and other novelty wholesalers. They stock the goods in their warehouse and reorder from suppliers as needed to fulfil customer orders. They also purchase large volumes of packaging materials and sell these in smaller quantities as a convenience for the customers.

Recently it started to sell a variety of edible novelties such as chilled chocolates. The company previously did not have to handle chilled items. Now, to meet food handling requirements, they must monitor the temperature in their chiller room and any of their trucks that have chiller sections.

DATA MODEL

- WWI creates purchase orders and submits the orders to the suppliers.
- Suppliers send the items and WWI stocks them in their warehouse.
- Customers order items from WWI
- WWI fills the customer order with stock items in the warehouse, and when they do not have enough stock, they order the additional stock from the suppliers.
- Some customers do not want to wait for items that are not in stock. So, the company has provided an option of backordering. For example: If they order for ten different stock items, and six are available, company sends the available stock immediately and backorder the remaining item. The item would then be sent later in a separate shipment.
- WWI invoices customers for the stock items, typically by converting the order to an invoice.
- WWI delivers stock items to customers and customers pay invoices to WWI.
- Periodically, WWI pays suppliers for items that were on purchase orders. This is often sometime after they have received the goods.
- WWI periodically counts the on-hand quantities of stock items to ensure that the stock quantities shown as available on their system are accurate. This process is called Stock take

DATA CLEANING AND SHAPING

The Database provided has 8-dimension tables and 6 fact tables:

Dimension Tables:

1.City

2.Customer

3.Date

4.Employee

5.Payment Method

6.Stock Item

7.Supplier

8.Transaction Type

Fact Tables:

1.Movement

It holds the information on the quantity of the stock movement into and out of the warehouse. It is connected to Customer, Date, Stock Item, Supplier and Transaction type dimension tables.

2.Order

It holds the information on Customer Orders. It is connected to City, Customer, Date, Employee and Stock Item dimension tables.

3.Purchase

It holds the information on stock purchases from suppliers. It is connected to Date, Stock and supplier dimension tables.

4.Sale

It holds the information on invoiced sales to the customers. It is connected to City, Customer, Date, Employee and Stock Item dimension tables.

5.Stock Holding

It holds the information on holding stock items. It is connected to Stock Item dimension table.

6.Transaction

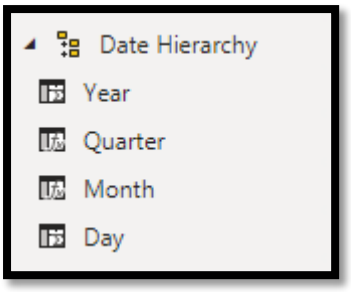
It holds the information on financial transactions involving customers and suppliers. It is connected to Customer, Date, Payment Method, Supplier and Transaction Type dimension tables.

As we primarily concentrate on the business problems and their solutions, we have deleted few unwanted columns as part of the data cleaning process

- Locations, Latest recorded population from City table
- Day Number, ISO Week number from Date Table

The team created few calculated columns and date hierarchy that are useful for our analysis:

Date Hierarchy: To find out the sales based on Year, Quarter, Month and Day under Date Dimension



Profit Margin:

Profit Margin represents the percentage of sales that turned into profits. It gauges the degree to which a company makes revenue. It is one of the key indicators for a company's financial health and growth potential.

Net Profit Margin = (Net Profits/Net Sales) *100

From the data provided by the company, we have Net Sales and Net Profits from Fact Sales table.

So, creating a calculated measure in Fact sales table using the DAX formula

```
ProfitMargin = (DIVIDE(Sales[Profit],Sales[SalesAmount],0)*100)
```

Day Sales Outstanding:

It is the average collection period or number of days it takes for a company to collect cash from its credit sales. It shows how well a company can collect cash from customers. It is a significant indicator of the company's ability to convert it sales into cash.

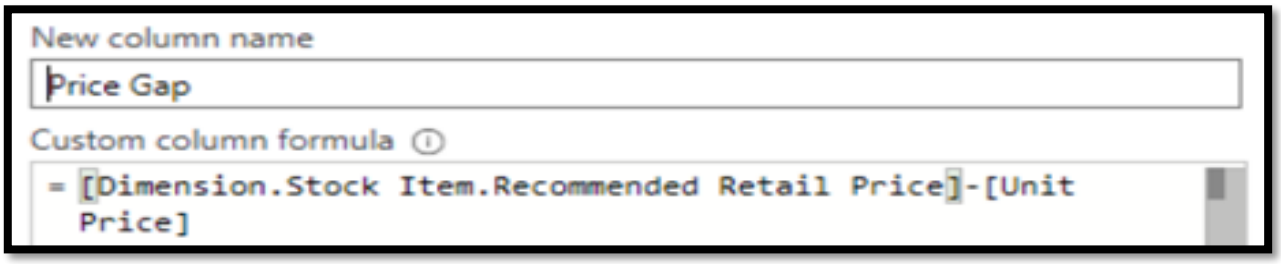
From the data provided by the company, we have Account receivable as Outstanding Balance and Net sales as Total Amount Including Tax

```
Days Sales Outstanding = ('Transaction'[Outstanding Balance]/'Transaction'[Total Including Tax])*365
```

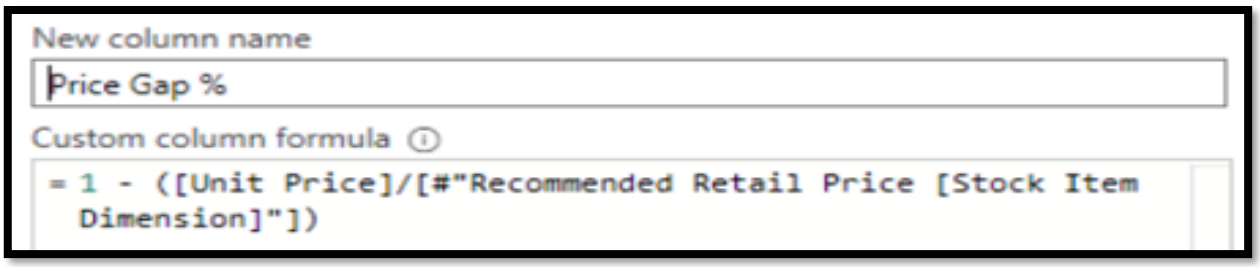
Price Gap:

It is the difference between the unit price the company is selling an item for, and the Recommended Retail Price(RRP) of it. While there may be many factors act against selling an item for a RRP, we consider that it is the maximum it can be sold (MRP).

From the data provided, we don't directly have the RRP in the Fact.Sale table, so, we've added it from the Dimension.Stock Item. The formula for Price Gap will be as follows:

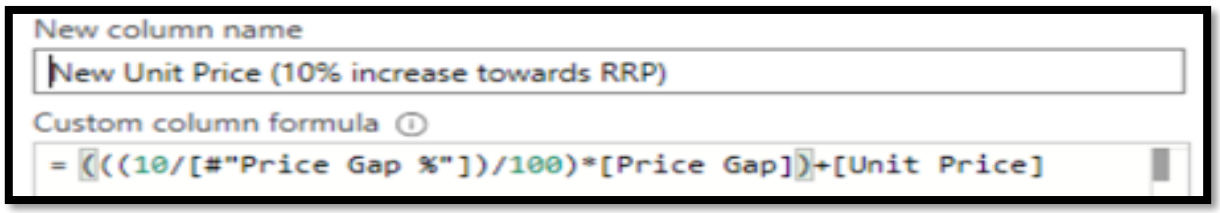


The better understanding of the price gap, a percentage difference is calculated as follows:



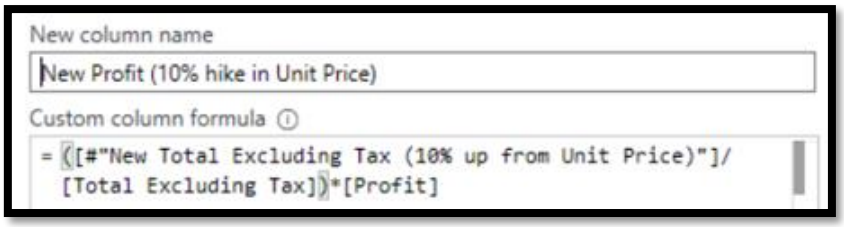
New Unit Price:

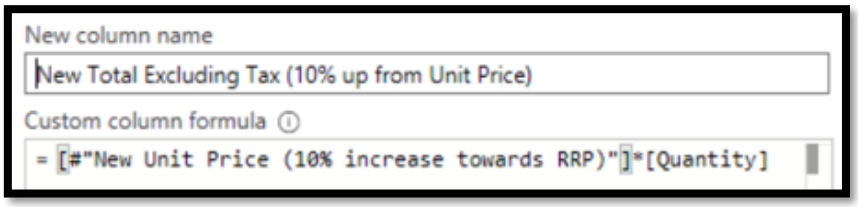
Assuming there's a room for increasing the price list of our products, the team increased the base unit price by 10%, **towards the RRP**, not from the base unit price. The New Unit Price is calculated as following:



New Calculated Totals:

Considering the New Unit Price, the total sales excluding tax and new profit are calculated as follows:

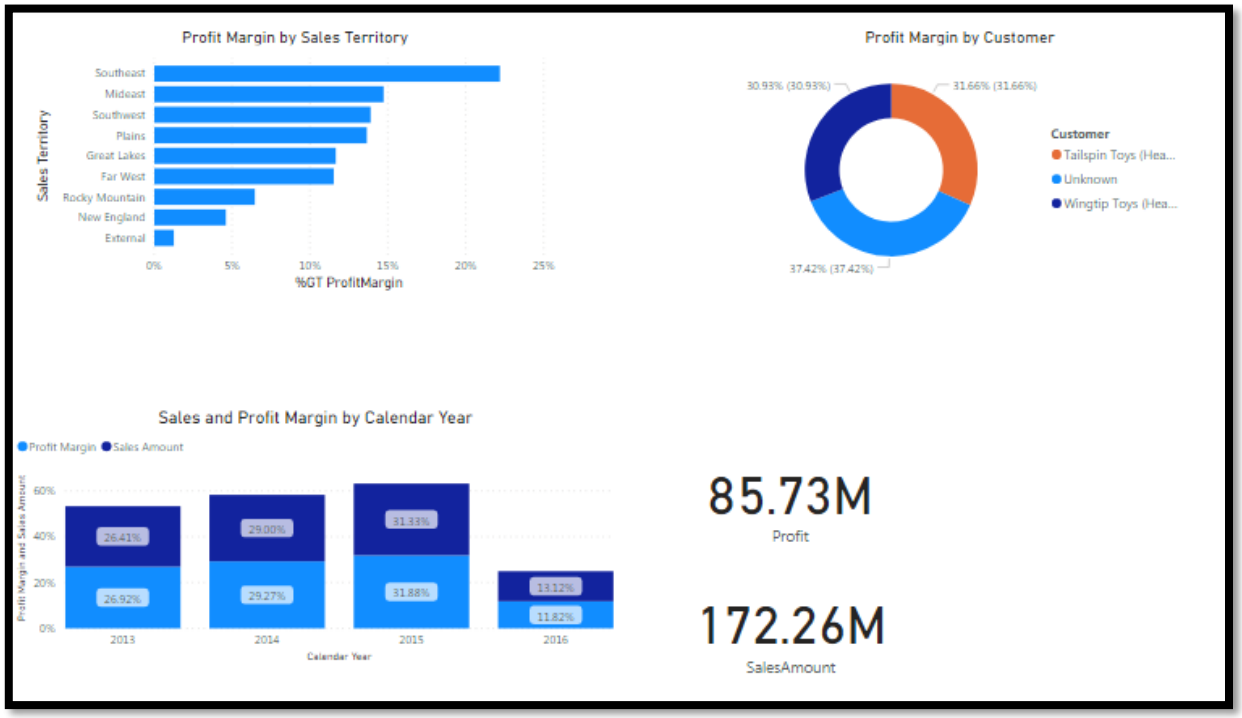




Note: The team also cleaned and transformed many existing columns to support the purpose, and can be found from the Power Query tab of the submitted Power BI files.

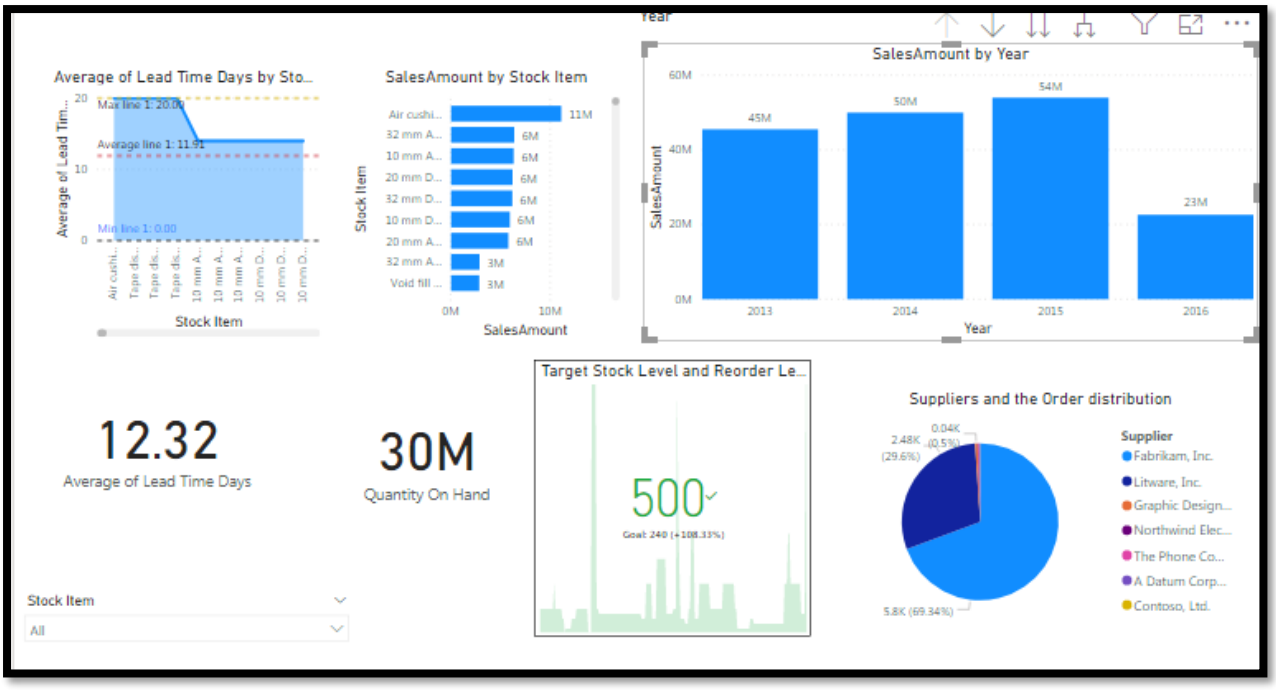
Dashboards

Profit Margin:



- The above dashboard is designed to help the company with the profit margin analysis by tracking its impact by Sales territory, customer and Comparative analysis between sales & Profit margin

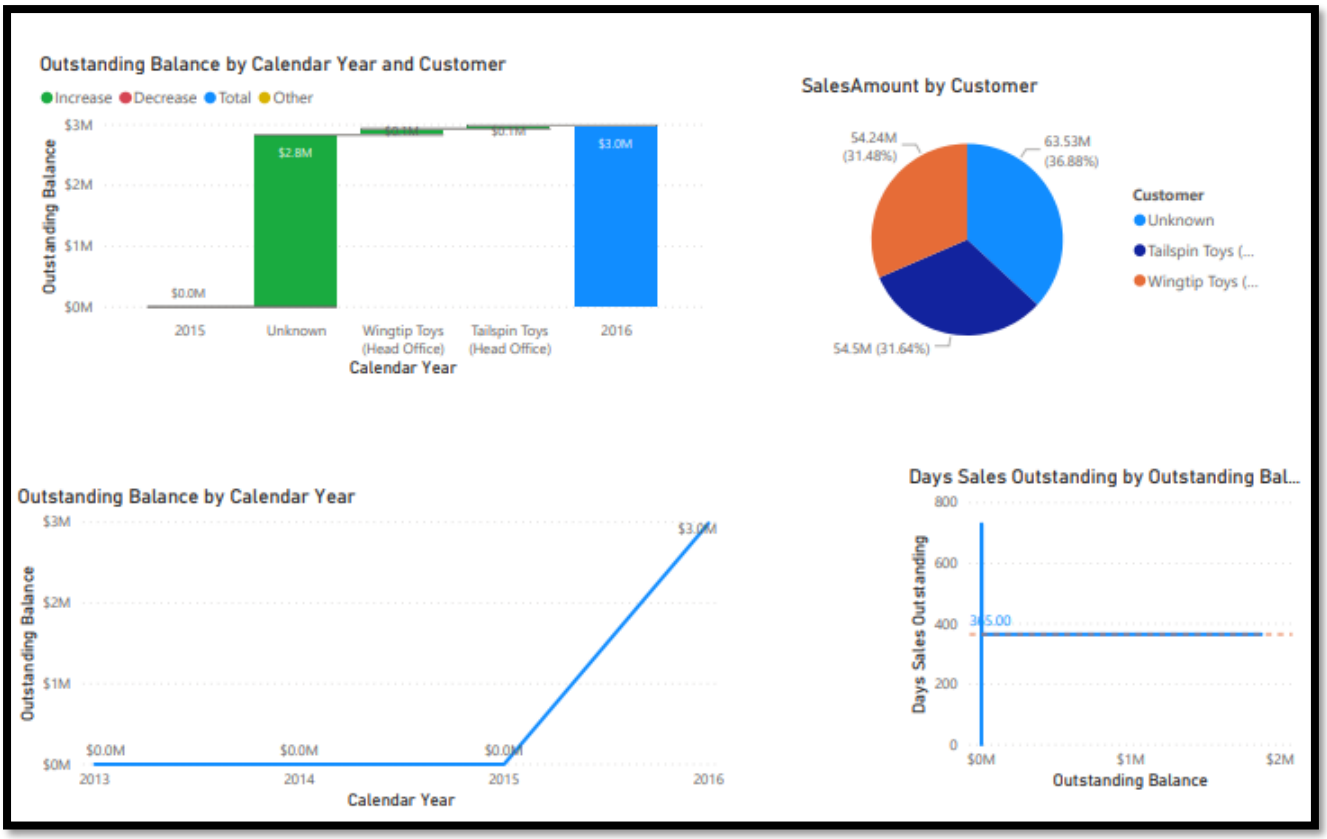
Lead Days:



The above dashboard is designed to help the company to keep the track of it lead days and its impact. From this dashboard, we get to know

- The average and maximum lead time for each product
- The Sales amount made by each product and its corresponding year, month and date
- How much quantity is on hand, what are the target stock levels and reorder levels?
- How many suppliers are there for each product?

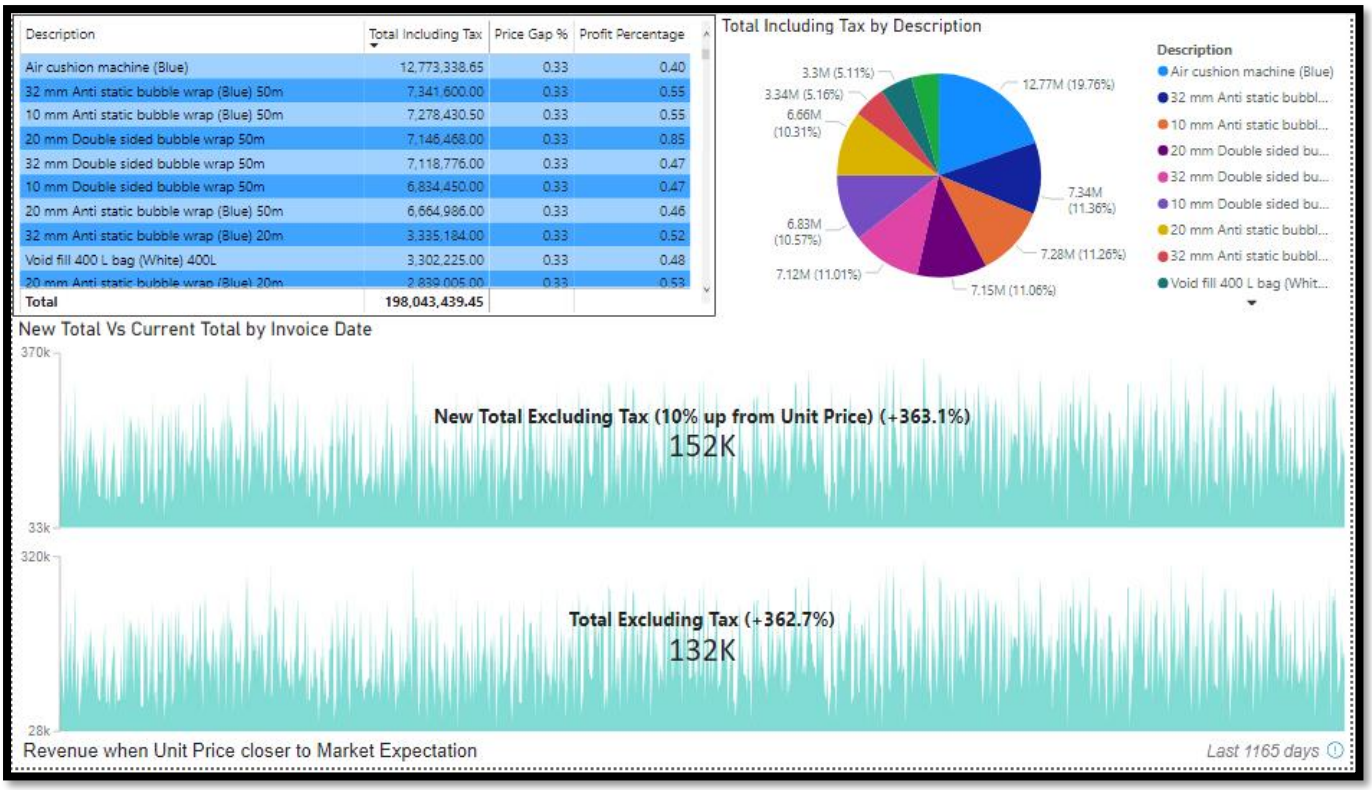
Outstanding Balance:



The above dashboard is designed to help the company to know about its collection efficiency and customer satisfaction. From this dashboard, we get to know

- Which customers are contributing to Outstanding balances?
- Which customers are making sales?
- What are the outstanding balances each year?
- How much time the company is taking to convert its sales into cash?

Price-gap:

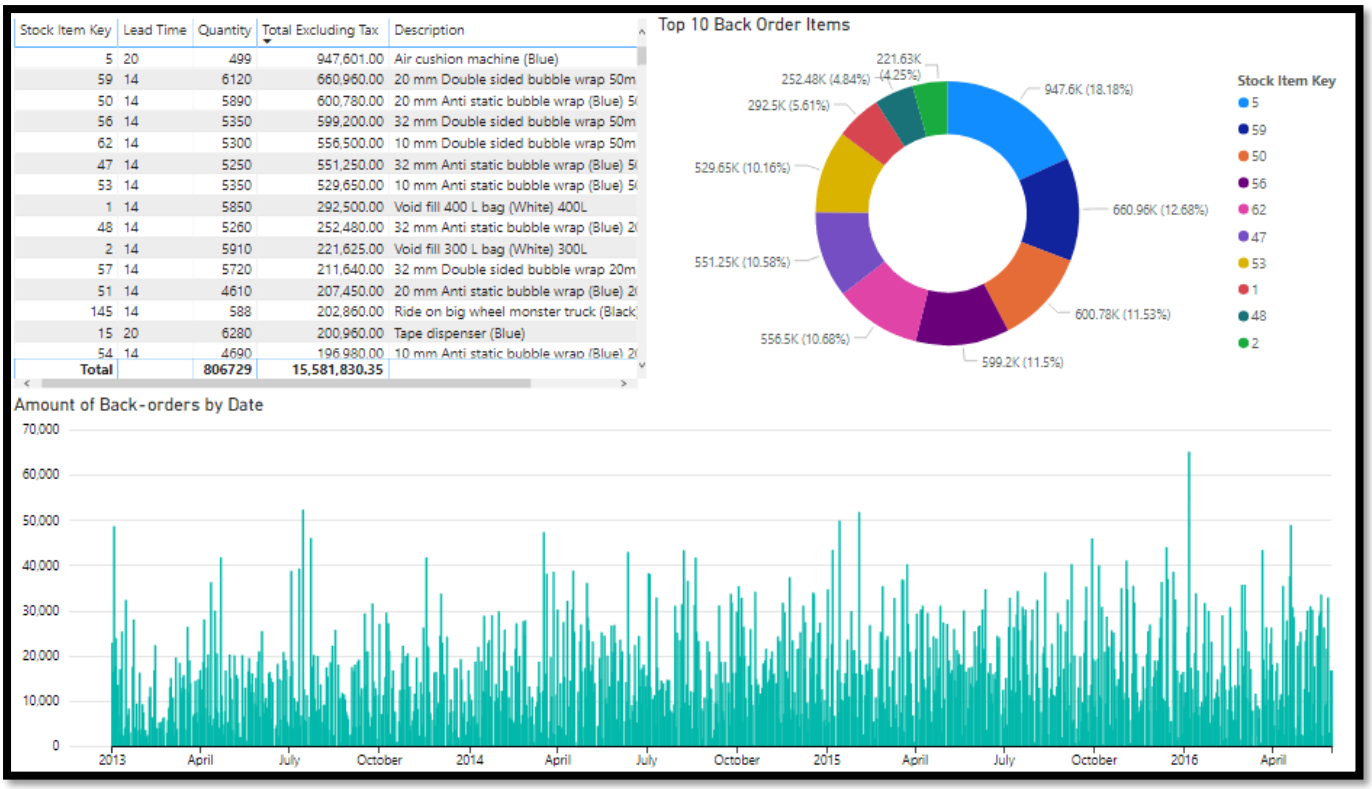


The above dashboard can be used to understand the revenue generated by a product, along with the price gap, profit percentage, and new revenue that can be generated by the product if the price gap is reduced by 10% or the base unit price is increased 10% towards the RRP. This dashboard is important because, when a company wants to expand, or increase the pricing of its products, it's essential that there's enough demand for it to be success after the hike.

From this, we can answer questions like:

- How much is a product with high price gap is making?
- Is there enough market demand for the product to increase its base price?
- How did a product do in sales for its base price over time?
- How much revenue can be generated in a given period if price is increased?

Back-order Analysis:



This dashboard helps in keeping track of the back orders that are being generated due to lack of product availability. This is particularly important because, having too many back orders can result in a bull whip effect on the entire supply chain. Hence keeping track of the items that are in the back orders, there by alleviating the strain on supply chain can save from a potential break down.

The questions that can be answered from this dashboard are:

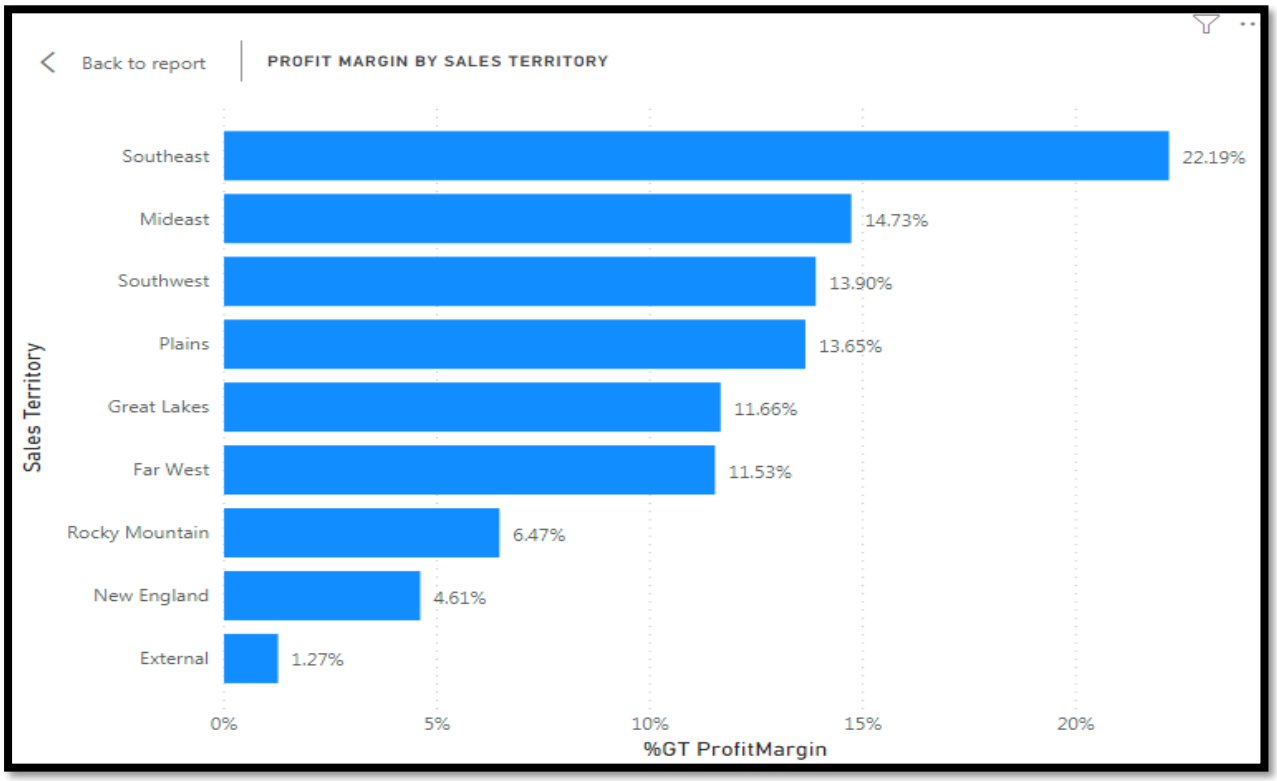
- How much revenue is at risk due to back-orders?
- Which stock items are causing most back-orders?
- How much revenue at risk due to a product? Is it due to lead-time?
- How much amount at risk due to back orders in given time-period?

VISUALIZATION & ANALYSIS

Profit Margin Analysis:

As we know, profit margin is key indicator to the business expansion, we are going to create a dashboard to track and analyze its impact by Sales Territory, customer and Sales

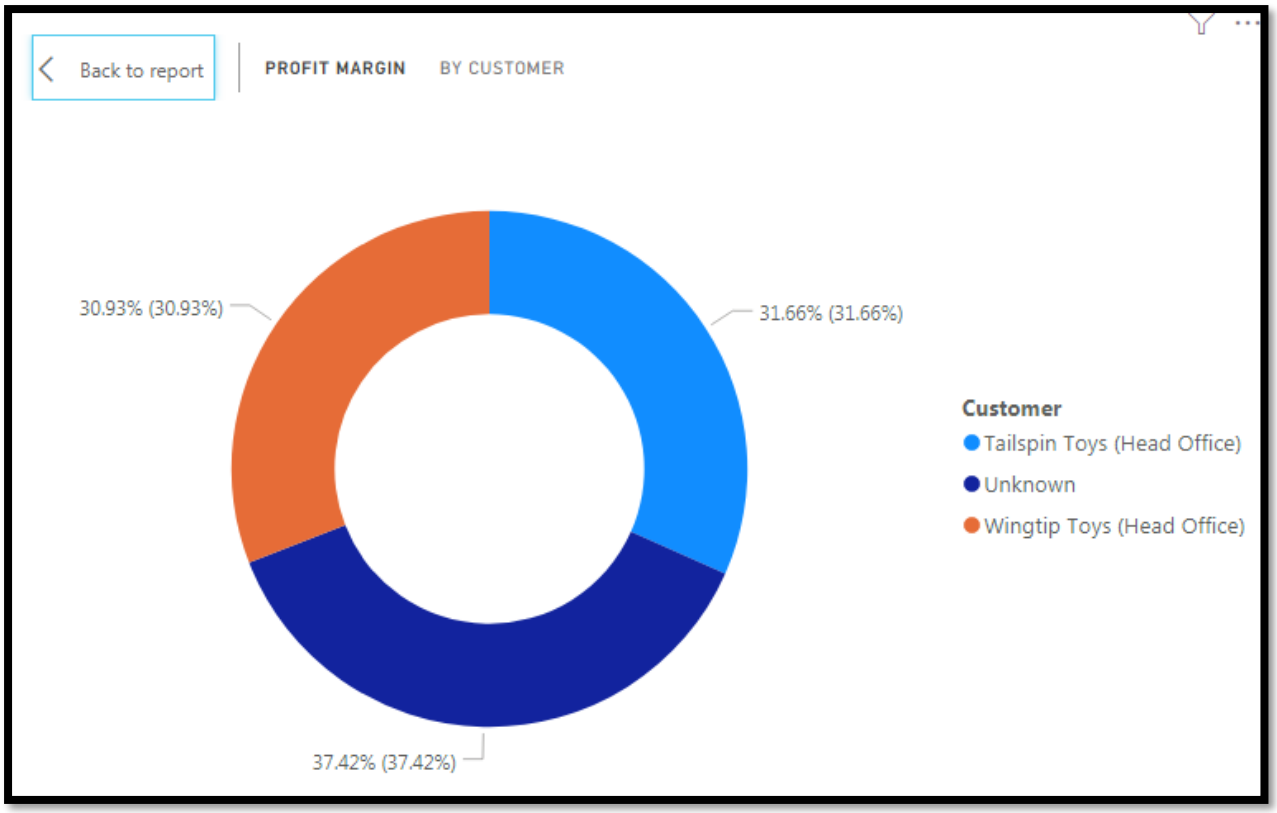
1.Profit Margin by Sales Territory:



From the above chart, we can see that

- South east region covers the total of 22% profit margin of company indicating the highest scope for operational efficiency and with the highest profits of amount $18.99 million
- External region is with lowest 1.27% of profit margin indicating the needs for improvements to create business productivity

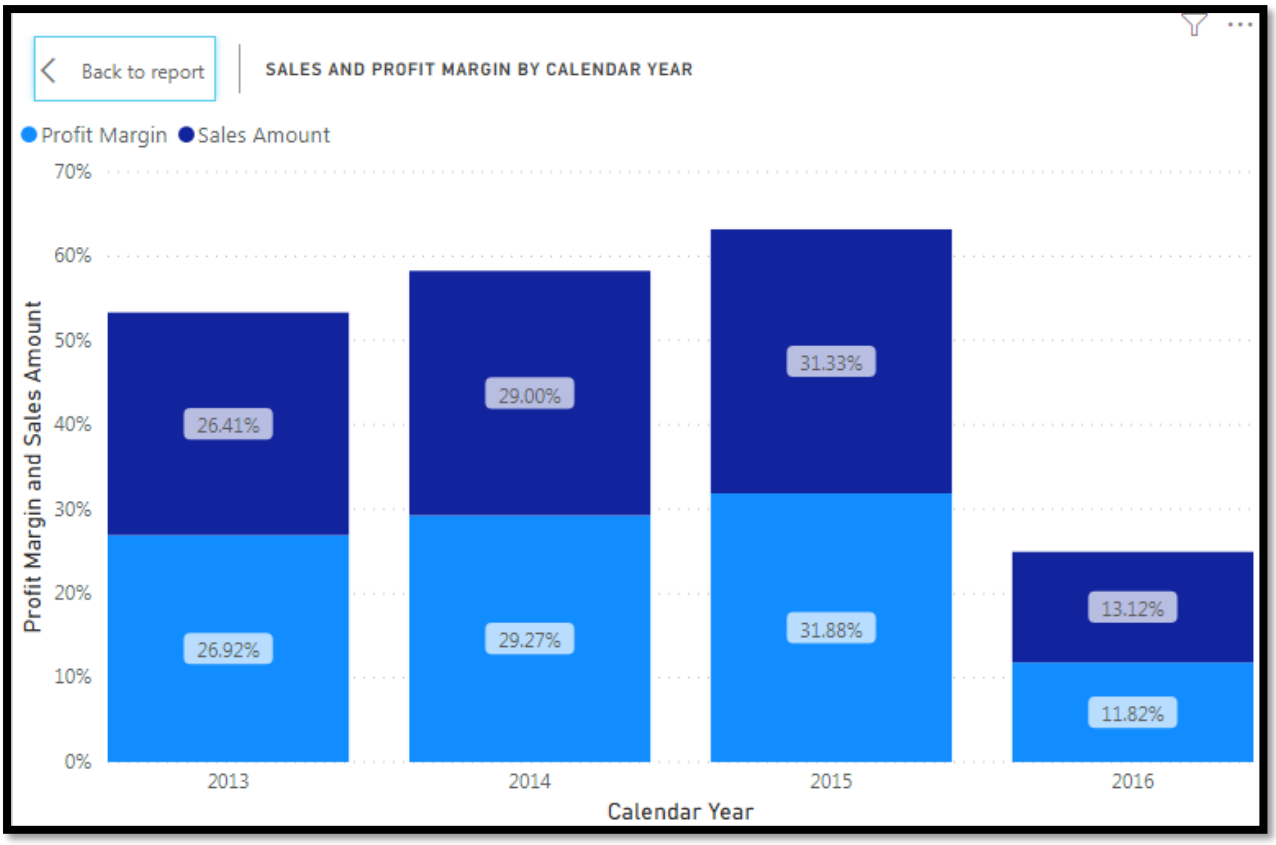
2.Profit Margin by Customer:



From the above chart, we can see that

- Tailspin Toys and Wingtip Toys are contributing to the 60% of the profit margin generated by the company which indicates that the company has returning customers.
- Almost 37% customers are the unknown customers indicating the uncertainty in the revenue being generated every year

3.**Sales and Profit Margin by Calendar Year:**



From the above chart we can see that the comparative analysis of Profit Margin and Sales Amount over the years from 2013 to 2016

- For the years 2013 to 2015, Profit margin is increasing along with the Sales Amount indicating that the amount of the profit made from the sales increases while the costs of the goods remain constant
- For the year 2016, profit margin decreases with the increase in sales indicating the higher operating costs and need for operational efficiency
- Also, sales have been increasing every year and the year 2015 with highest sales.
- In the year 2016, there has been a drastic fall of sales to 13% from 31% indicating the reduction in operating profits and increase in expenses

Output & Recommendations:

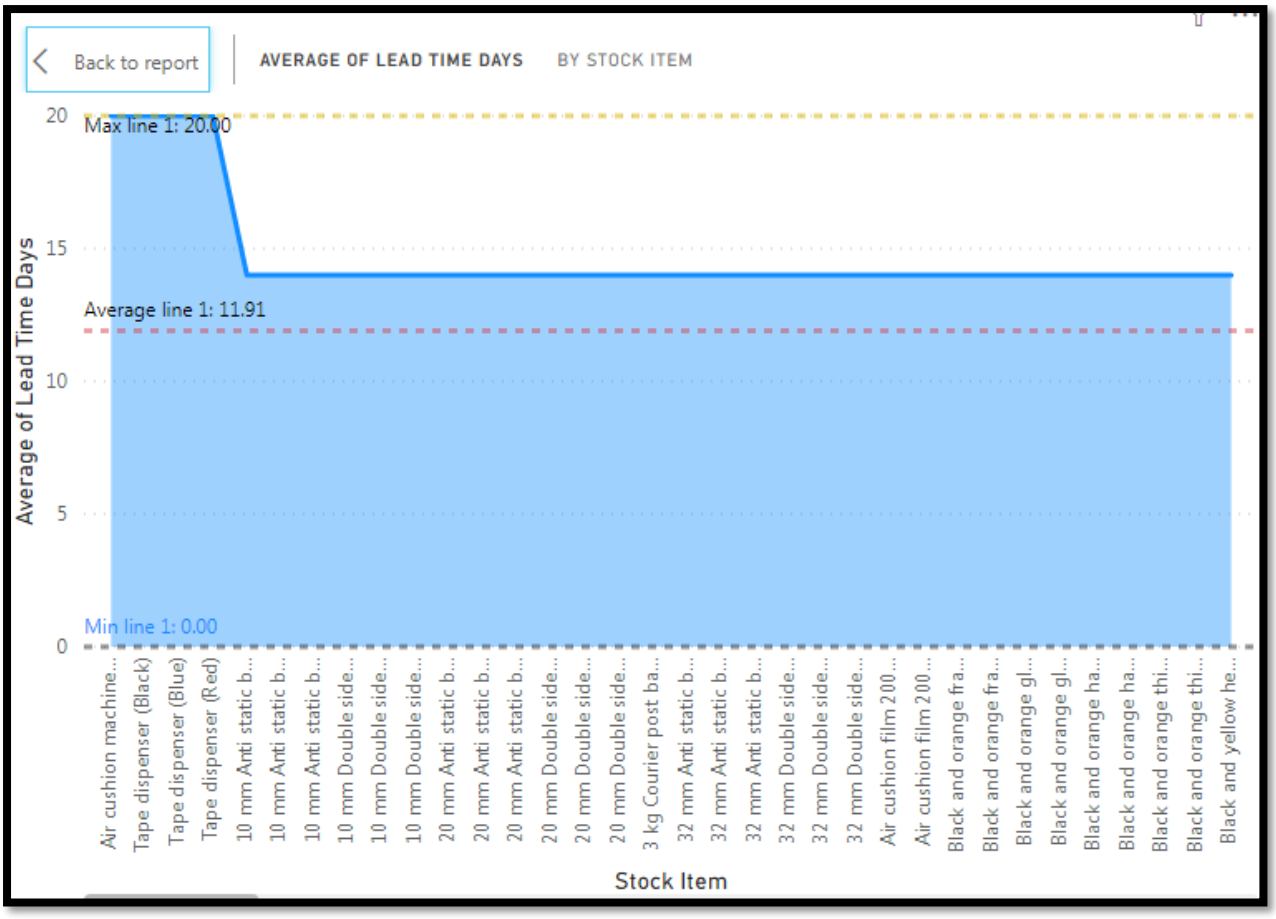
- South East regions are most suitable for business expansions while the external regions need improvements to create business productivity
- 37% of the customers are unknown customers creating the instability in the sales every year
- Company is facing drastic reduction in sales in the year 2016
- Profit Margin is decreasing though there are increasing sales indicating the company's operational inefficiency

- Increasing the brand visibility and reputation through effective marketing strategies is one of the easiest ways to generate profits
- Ensuring the ease of access and adequate transportation facilities to get the goods to and from the site
- Identify the customers that are profitable and segment them to offer special discounts, pricings and service levels
- Improving the customer onboarding process by clearly communicating the users throughout the sales funnel
- Improve the inventory visibility to make better decisions on purchasing, sales and marketing in turn helping to sell more products and increasing profits
- Streamline the operations by reducing the unnecessary expenses and automating the repetitive tasks
- Finding out the most profitable products and transferring them to high-traffic areas of the stores
- Collaborate with vendors and engage them in business planning to improve the order flow process

Lead Time Analysis:

Lead Days:

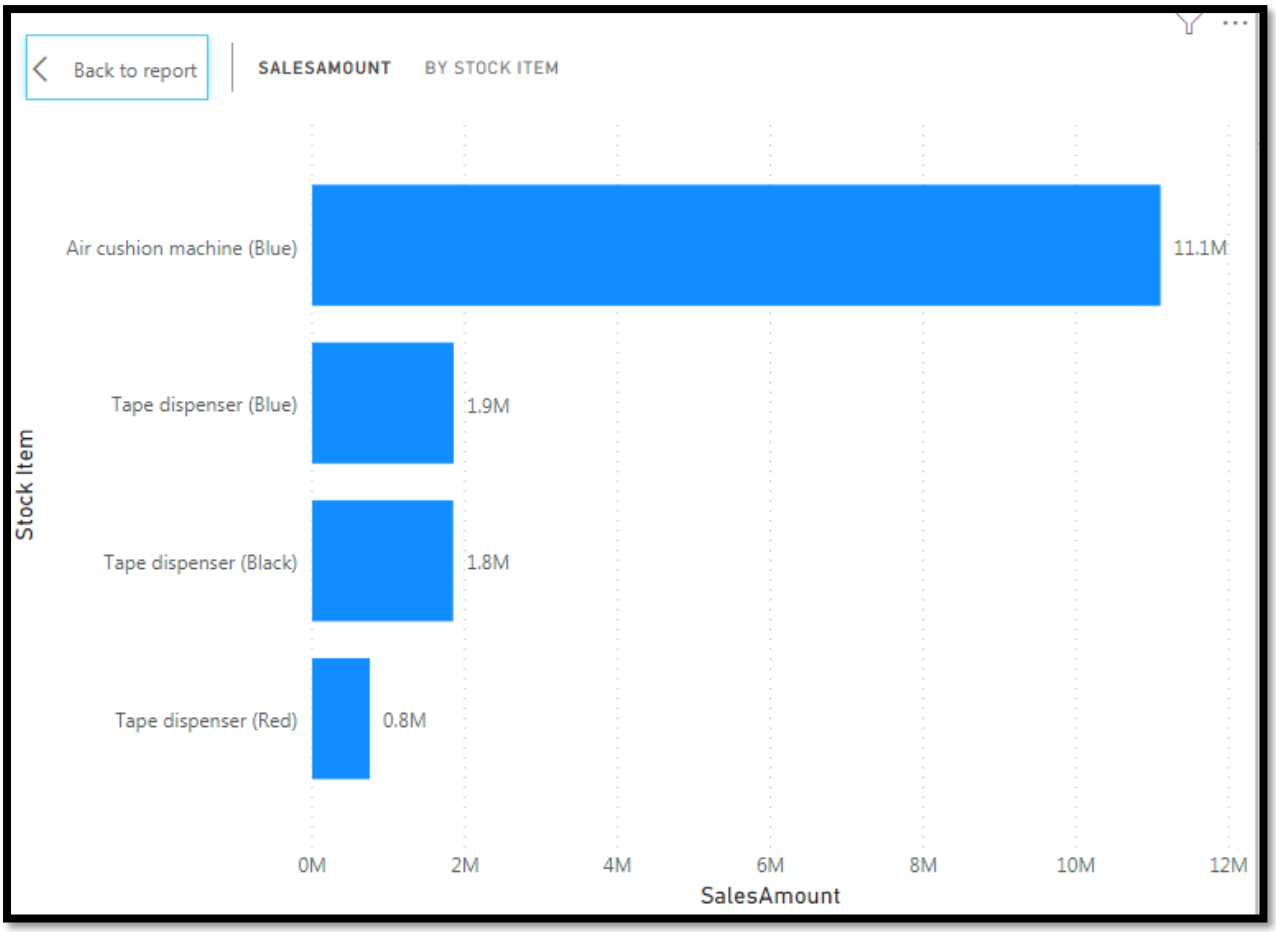
Lead time is the amount of the time between process initiation and completion. Longer lead times can cause of series of negative effects for the business and the customers. It is one of the single biggest factors influencing the performance of your inventory control processes. Here, we are going to analyze the material lead time which is the amount of time taken to place an order with a supplier and to receive it.



From the above chart, we can see that the graph is plotted between each stock items and their average lead time days.

- Most of the stocks are being delivered in 11.91 days
- Maximum lead time is about 20 days
- The products Air Cushion machine and tape dispensers are taking the lead time of 20 days to get into the stock

Now as we know that the Air cushion machine and tape dispensers are taking maximum lead time, it is necessary to understand its impact on the sales

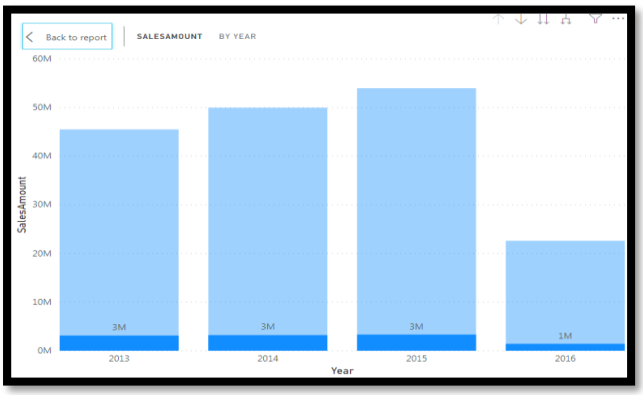


From the above charts, we can see the sales amount made by each stock item

- As we can see that, Air cushion is making the highest sales of amount 11.1million dollars and Tape dispenser is making about 4.5 million dollars

It is also necessary to see the products sales trend over the years to effectively analyze the products impact on the sales

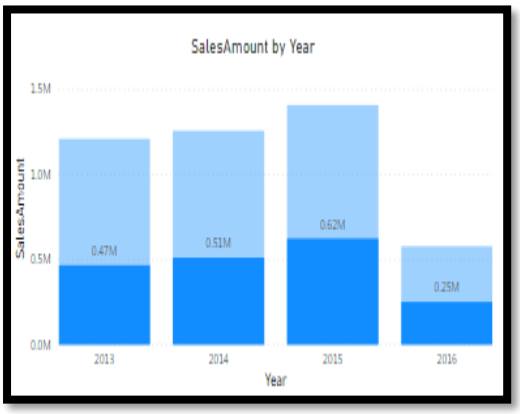
<u>Air cushion sales trends:</u>

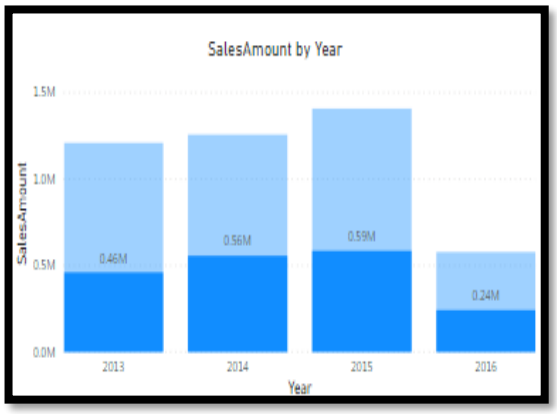


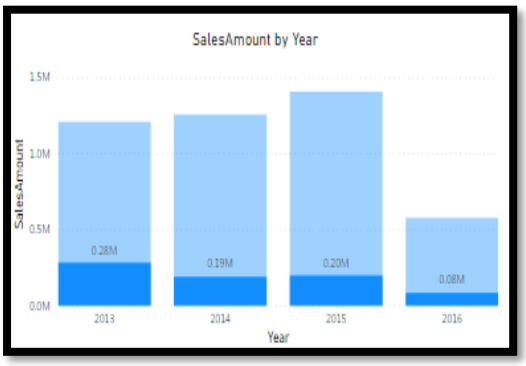
- From 2013 till 2015, the sales of air cushions remain constant to the sales amount of 3 million dollars every year

- In 2016, sales for Air cushion dropped to 1 Million dollars

Tape Dispenser (Blue, Black and Red) Trends:



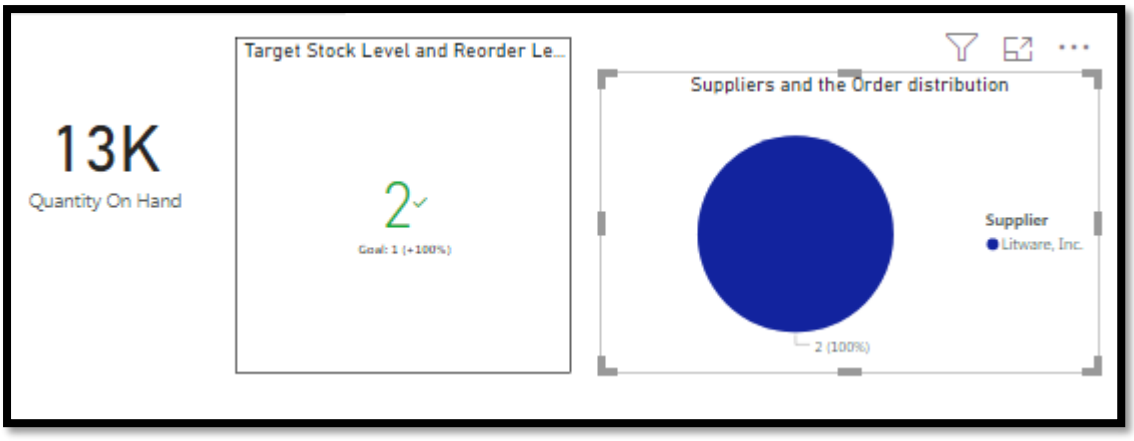




- For the tape dispenser blue, highest sales recorded in 2015 with the amount of $0.62 million and lowest sales in 2016 with the amount of $0.25million
- For the tape dispenser black, highest sales recorded in 2015 with the amount of $0.59 million and lowest sales in 2016 with the amount of $0.24million
- For the tape dispenser red, highest sales recorded in 2013 with the amount of $0.28 million and lowest sales in 2016 with the amount of $0.08million

Now as we got to know the product trends over the year, our next step is to analyze the reorder levels and target order levels, quantity on hand and suppliers for these two products:

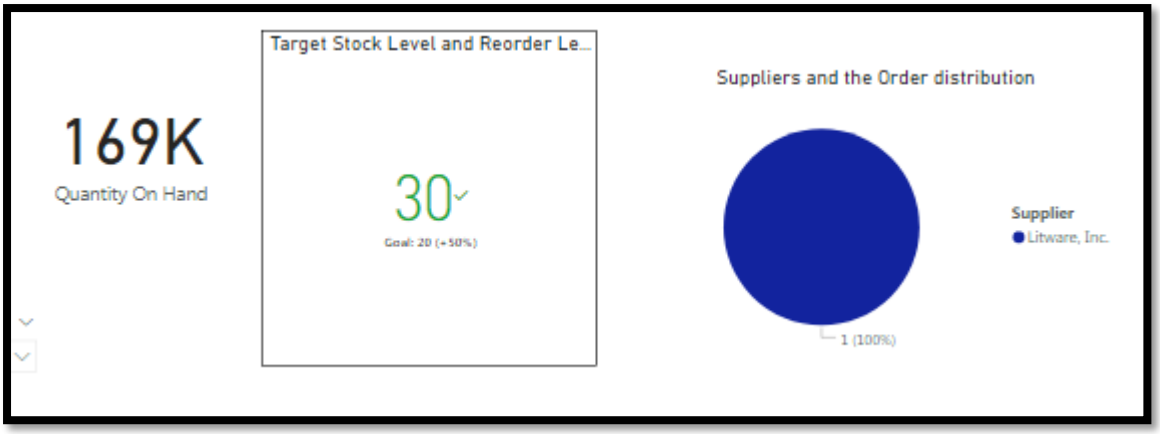
Air cushion:



- The quantity in the stock is about 13000 products
- Target level that is the typical stock level is about 2 and the reorder level is 1
- Air cushion has a single supplier Litware, Inc

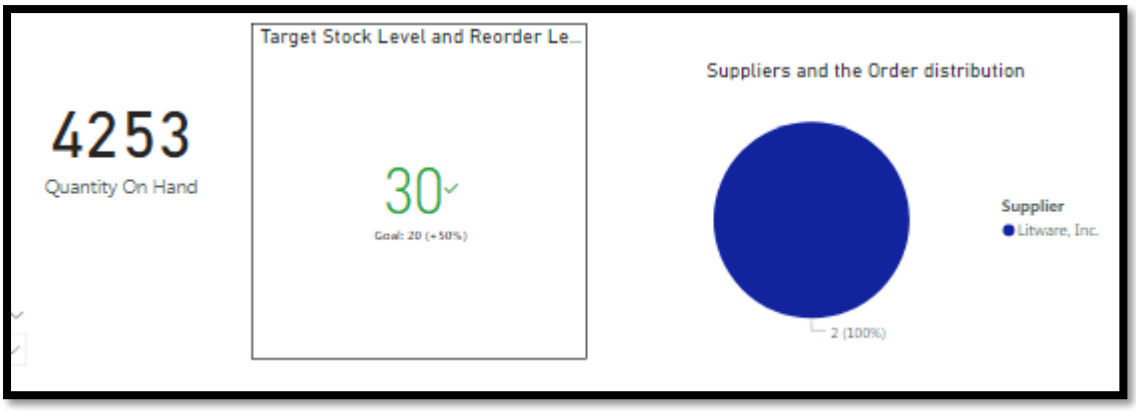
Tape Dispenser:

Blue:



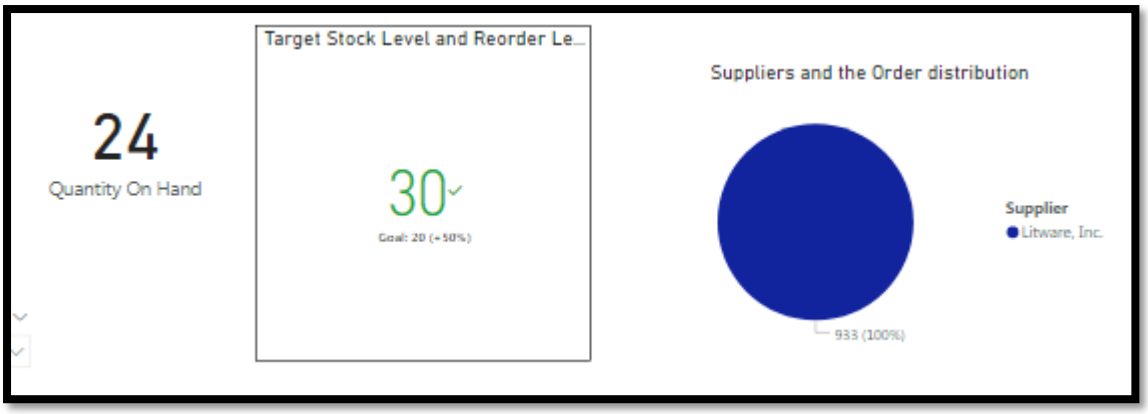
- The quantity in the stock is about 169K products
- Target level that is the typical stock level is about 30 and the reorder level is 20
- Air cushion has a single supplier Litware, Inc

Black:



- The quantity in the stock is about 4253 products
- Target level that is the typical stock level is about 30 and the reorder level is 20
- Air cushion has a single supplier Litware, Inc

Red:



- The quantity in the stock is about 24 products
- Target level that is the typical stock level is about 30 and the reorder level is 20
- Air cushion has a single supplier Litware, Inc

Output &Recommendations:

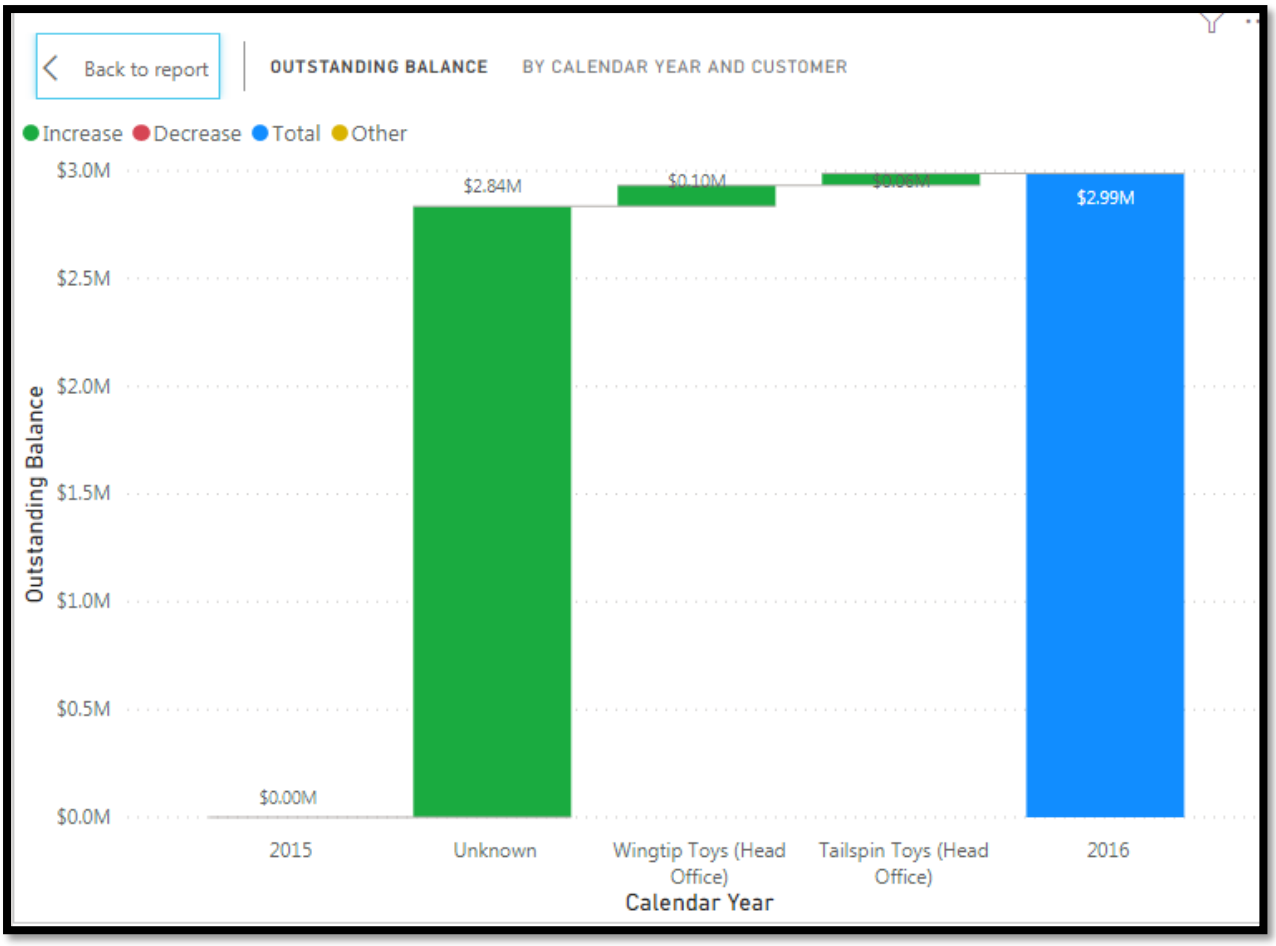
- From the above analysis, we can clearly see that the company is facing serious issues with poor inventory management
- Air cushion has the highest demand with $11.1 million with an average of $3millions of revenue each year
- On the other hand, it has the highest lead time of 20 days, quantity on hand is just 13000 and reorder level is 1 putting the company at the serious stake with a highest demand product
- Also, the product with the such a huge demand has only supplier Litware Inc

- At the same time, the tape dispenser is making the least sales when compared to Air cushions has the reorder level at 20 which calls for the serious attention for inventory management.
- In order to have the better inventory control, first it should reduce the lead times of the products with highest demand by implementing extended supply chain value map
- Extended Supply chain value map tracks the entire order chain and make the inventory process smooth and easier to navigate
- It is important to increase the stable strategic suppliers for the products with highest demand to get the products on time and on demand.
- Increase the target and reorder levels to 500 in each warehouse for effective functioning of the sales process at least for the high demand products
- Change the existing shipping methods to more fast and frequent shipments
- Reduce the products with low demands

Outstanding Balance Analysis:

Outstanding balance lets you know if the order is finalized or not. If the outstanding balances are high meaning that company is offering the products in credit and the sales are not being converted into cash.

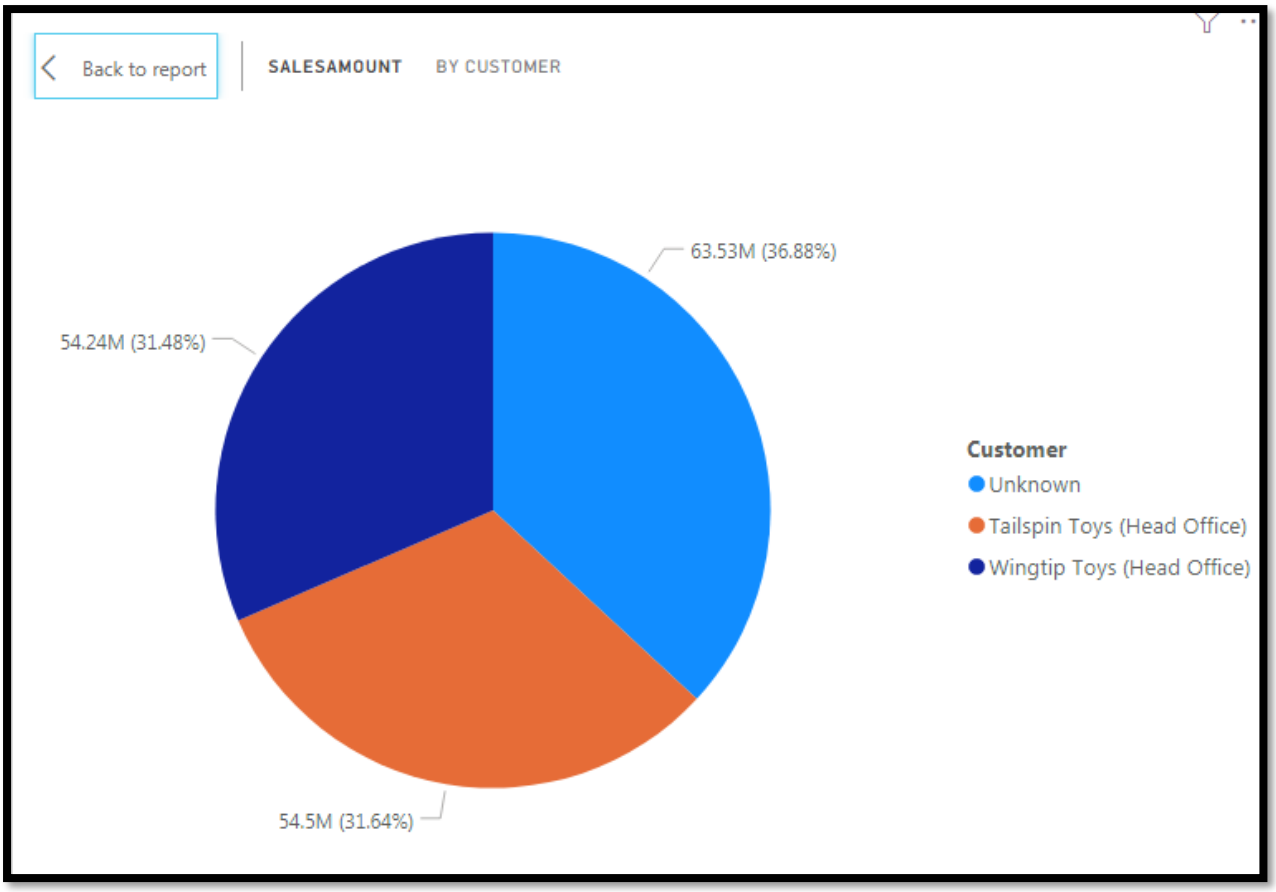
This can be serious effect on the company's operating efficiency. Here we are going to analyze outstanding balance by customer and time to know its impact on the company.



From the above graph, we can see that

- Wingtip Toys and Tailspin Toys are contributing to the outstanding balance which is about less than a million
- While the Unknown customers are contributing to the outstanding balance which is about $2.84 millions

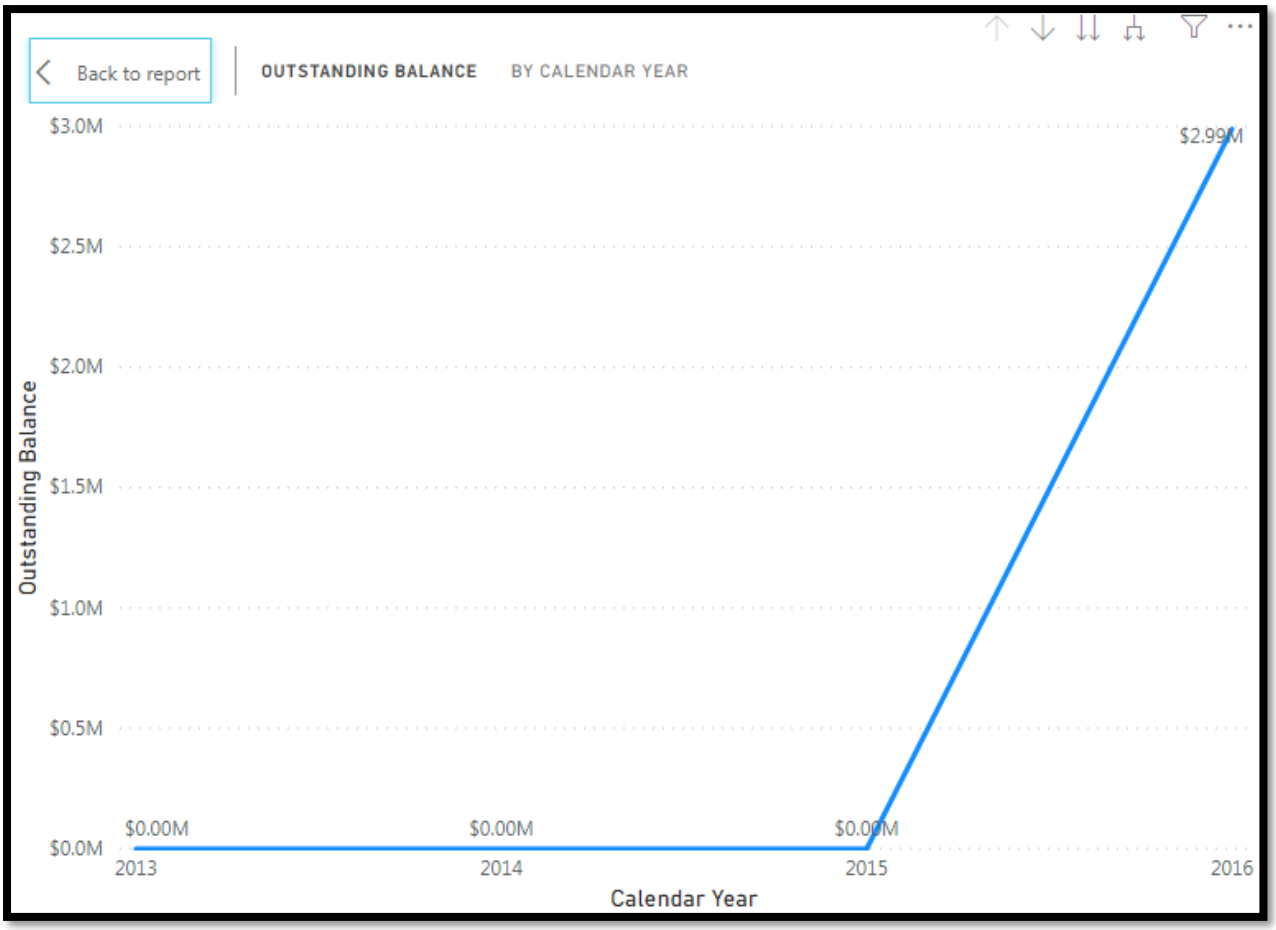
Now we also need to check the customers contribution towards sales for further analysis



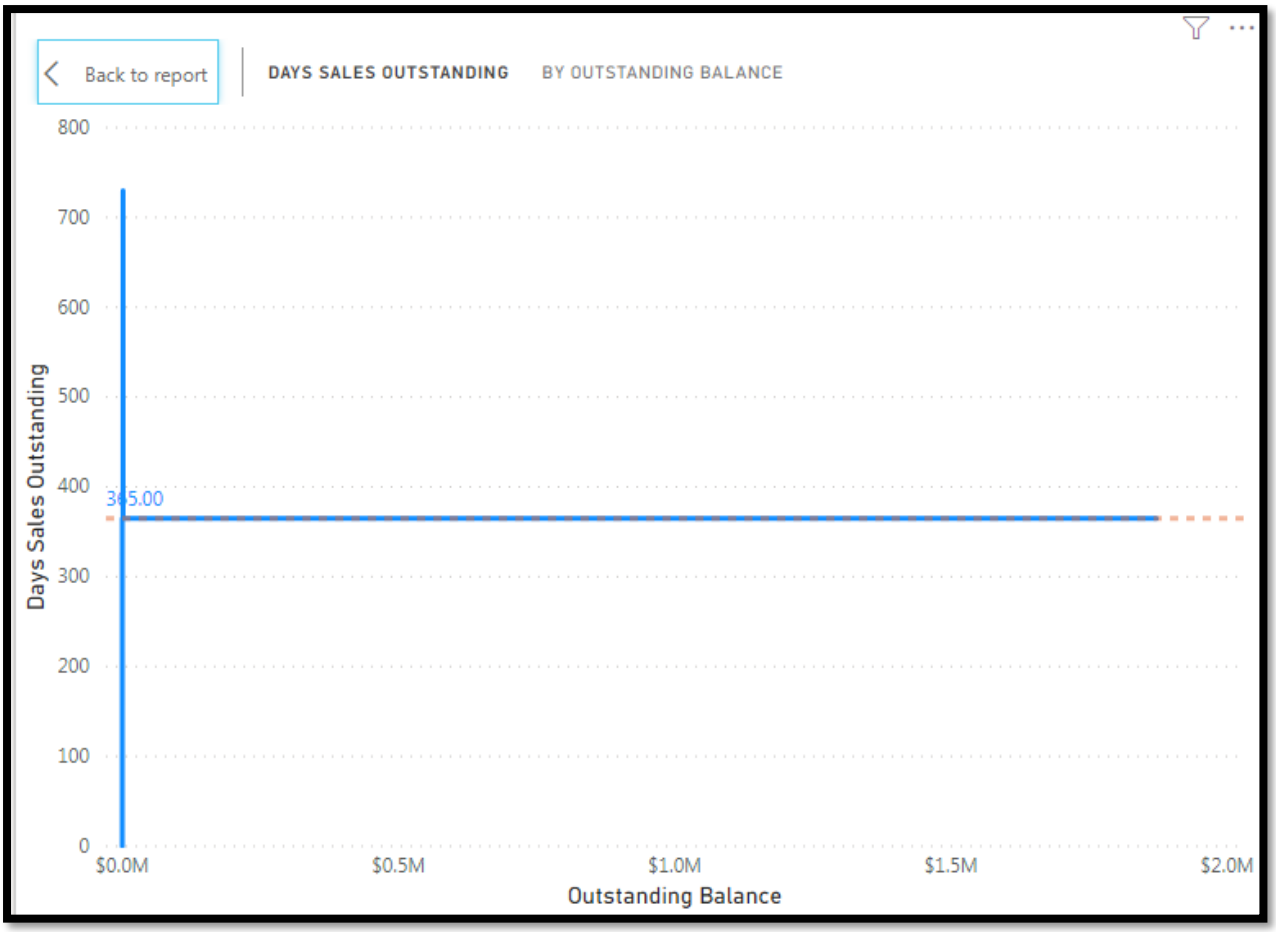
From the above graph, we can see that

- Tailspin toys is contributing to 36% of the sales which is about $63.53 millions
- Wingtip toys is contributing to 31.64% of the sales which is about $54.5 millions
- Unknown customers are contributing to 31.48% of the sales which is about $54.24 millions

As we know the customers and their contributions towards sales and outstanding balances, now we need to know the time at which outstanding balances are incurred and how much time the company is taking to make the orders finalized



From the above chart, we can see that there are no outstanding balances from the year 2013 to 2015 and from the year 2015 to 2016, outstanding balances raised $2.9 millions



From the above graph, we can see that the company is taking almost a year to actually convert the sales into cash

<u>Output & Recommendations:</u>

- About 98% of the outstanding balances are occurring due to the unknown customers
- Tailspin toys and Wingtip toys are the potential customers contributing to about 67% sales which has a very less out standing sales of about 3.25% indicating that they are trusted customers with high sales
- Company is almost taking 365 days to convert its sales of about $3millions into cash which is a very long period indicating that its poor collection procedures, poor customer satisfaction or their unwillingness to pay back and company's way of selecting the customers that are not credit worthy
- Automate the billing process to have an efficient collections process. The faster you provide the invoice to the customers, the faster the company can receive the payments

- Sending out the consistent payment reminders via multiple collection channels like text reminders, collection calls.
- Rewarding the early payers and charging fines for the customers who are consistently paying late
- Offer the customers with more payment options like accepting the customers to pay through third party credit line enabling them to get flexible terms and still the company gets paid on time

Profit Gap Analysis

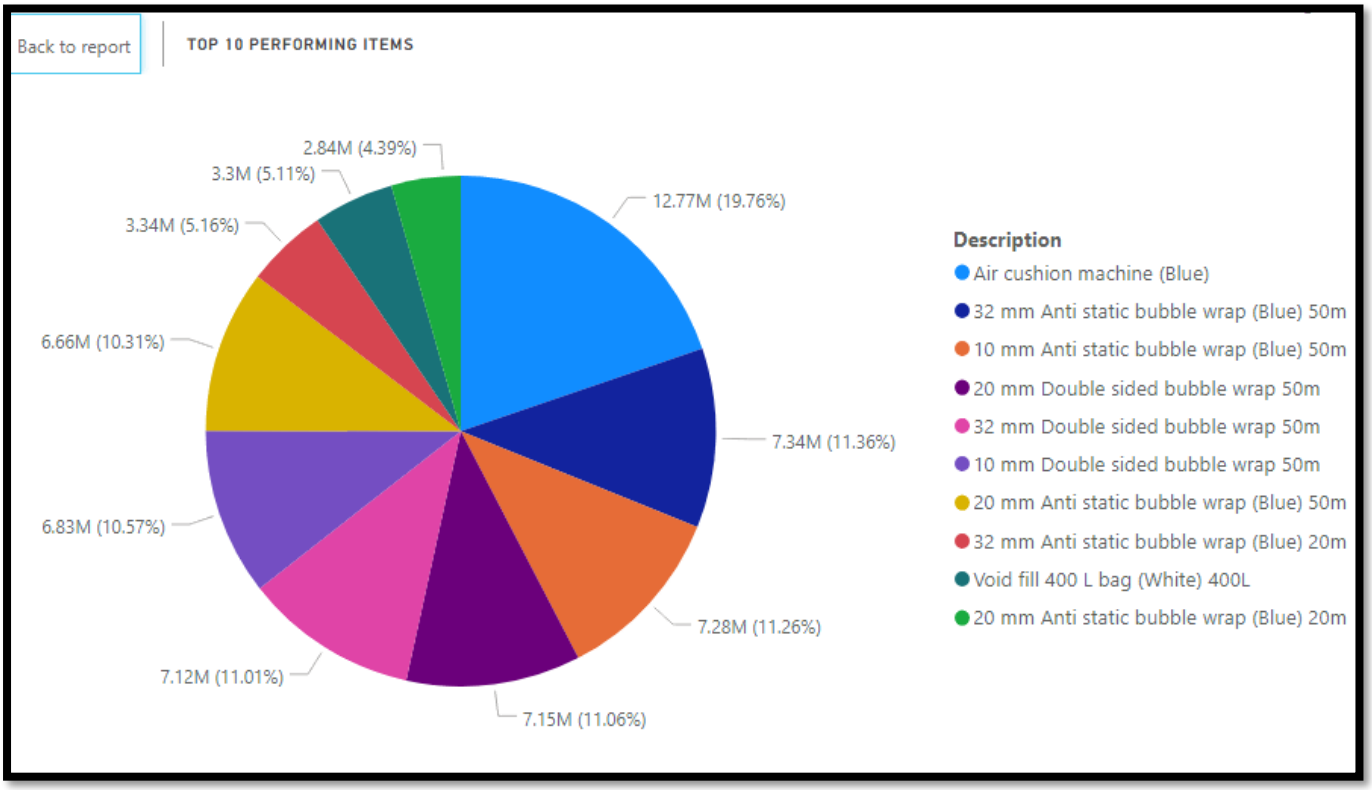
There's usually a lot of time spend on various other things when planning for an expansion, but coming back to the basics, a company would want to see if there are any opportunities to make more with what they are doing currently.

One such effort is to analyze if there's any difference in the price customer is willing to pay, and the actual cost. Because, such difference not met is equal to opportunity loss and revenue lost.

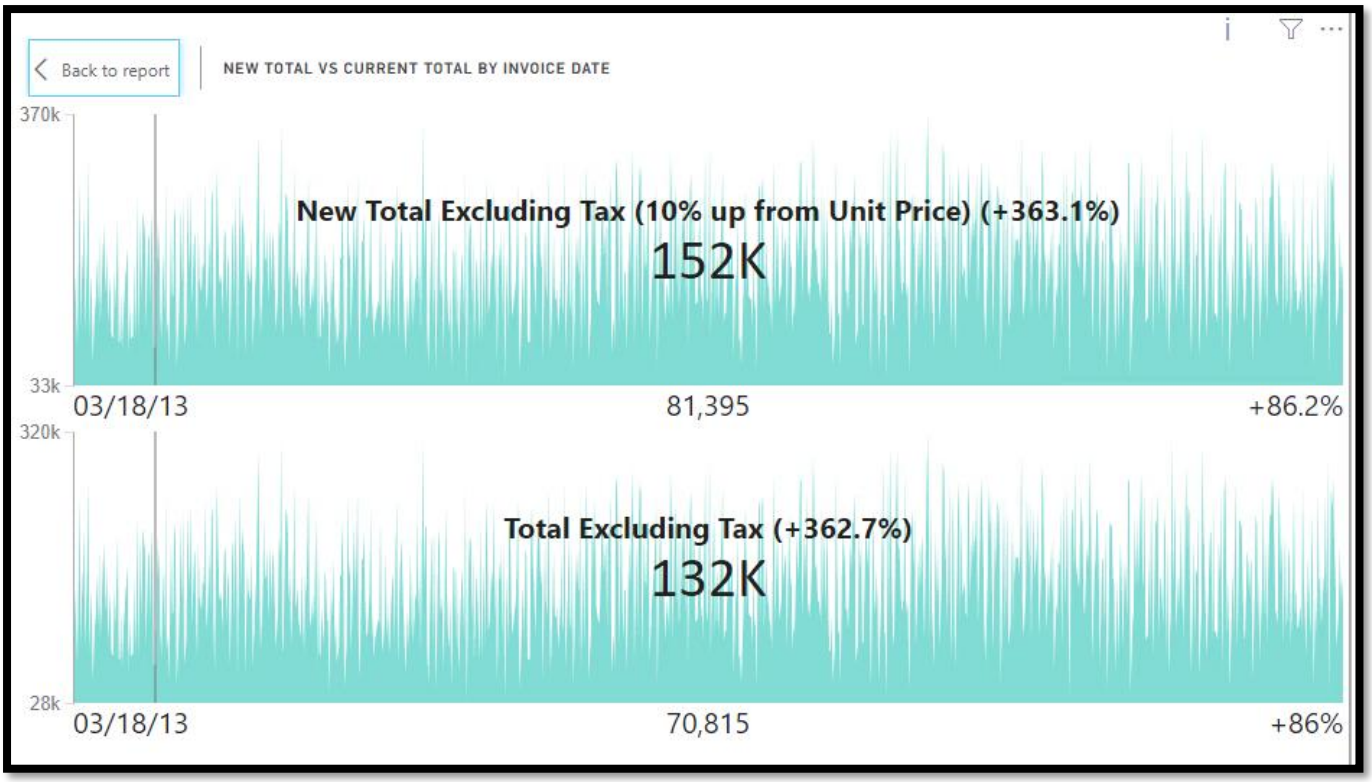
Description	Total Including Tax	Price Gap %	Profit Percentage
Air cushion machine (Blue)	12,773,338.65	0.33	0.40
32 mm Anti static bubble wrap (Blue) 50m	7,341,600.00	0.33	0.55
10 mm Anti static bubble wrap (Blue) 50m	7,278,430.50	0.33	0.55
20 mm Double sided bubble wrap 50m	7,146,468.00	0.33	0.85
32 mm Double sided bubble wrap 50m	7,118,776.00	0.33	0.47
10 mm Double sided bubble wrap 50m	6,834,450.00	0.33	0.47
20 mm Anti static bubble wrap (Blue) 50m	6,664,986.00	0.33	0.46
32 mm Anti static bubble wrap (Blue) 20m	3,335,184.00	0.33	0.52
Void fill 400 L bag (White) 400L	3,302,225.00	0.33	0.48
20 mm Anti static bubble wrap (Blue) 20m	2,839,005.00	0.33	0.53
10 mm Anti static bubble wrap (Blue) 20m	2,766,141.00	0.33	0.45
Void fill 300 L bag (White) 300L	2,470,200.00	0.33	0.52
32 mm Double sided bubble wrap 20m	2,447,901.50	0.33	0.62
Ride on big wheel monster truck (Black) 1/12 scale	2,289,247.50	0.33	0.41
20 mm Double sided bubble wrap 20m	2,245,122.00	0.33	0.55
32 mm Anti static bubble wrap (Blue) 10m	2,138,816.00	0.33	0.50
Tape dispenser (Blue)	2,131,456.00	0.33	0.47
Tape dispenser (Black)	2,123,360.00	0.33	0.47
Total	**198,043,439.45**		

The above table, sorted descending for sales, shows us how the products are doing good in sales.

- The table helps us identify the total sales of a product.
- Helps in knowing the price gap, difference between unit price and recommended price.
- Can derive the profit made by selling a unit of the item in question.



- While the previous table helps in identifying the opportunity for each product, this visualization helps in grasping the top 10 performing items. This helps in identifying the potential items to which a price hike can be given since there's a healthy market interest. Also, helps in identifying the current sales amount, and contribution to overall sales.



- As we've seen the customer interest, and checked if there's room for improving the base unit price of the item, this visualization helps in giving us an idea of how the sales looks like if the price gap is reduced by 10%.

Output & Recommendations: Considering the option of increasing base unit price to gain more revenues to support the expansion, this dashboard gives us the items that are primed for increase in their base price.

- Top 10 items that are high performing are:
  - Air Cushion Machine, Blue
  - 32mm Anti-static bubble wrap, 50m
  - 10mm Anti-static bubble wrap, 50m
  - 20mm Double sided Anti-static bubble wrap, 50m
  - 32mm Double sided Anti-static bubble wrap, 50m
  - 10mm Double sided Anti-static bubble wrap, 50m,
  - 20mm Anti-static bubble wrap, 50m
  - 32mm Anti-static bubble wrap, blue 20m
  - Void fill 400 L bag, white, 400L
  - 20mm Anti-static bubble wrap, blue, 50m
- These items have reasonable price gap, and have healthy profit percentage, so selecting some of these items as a pilot, and increasing in price by 10% in select places will give an initial report on how the price increase is taken by the customers.

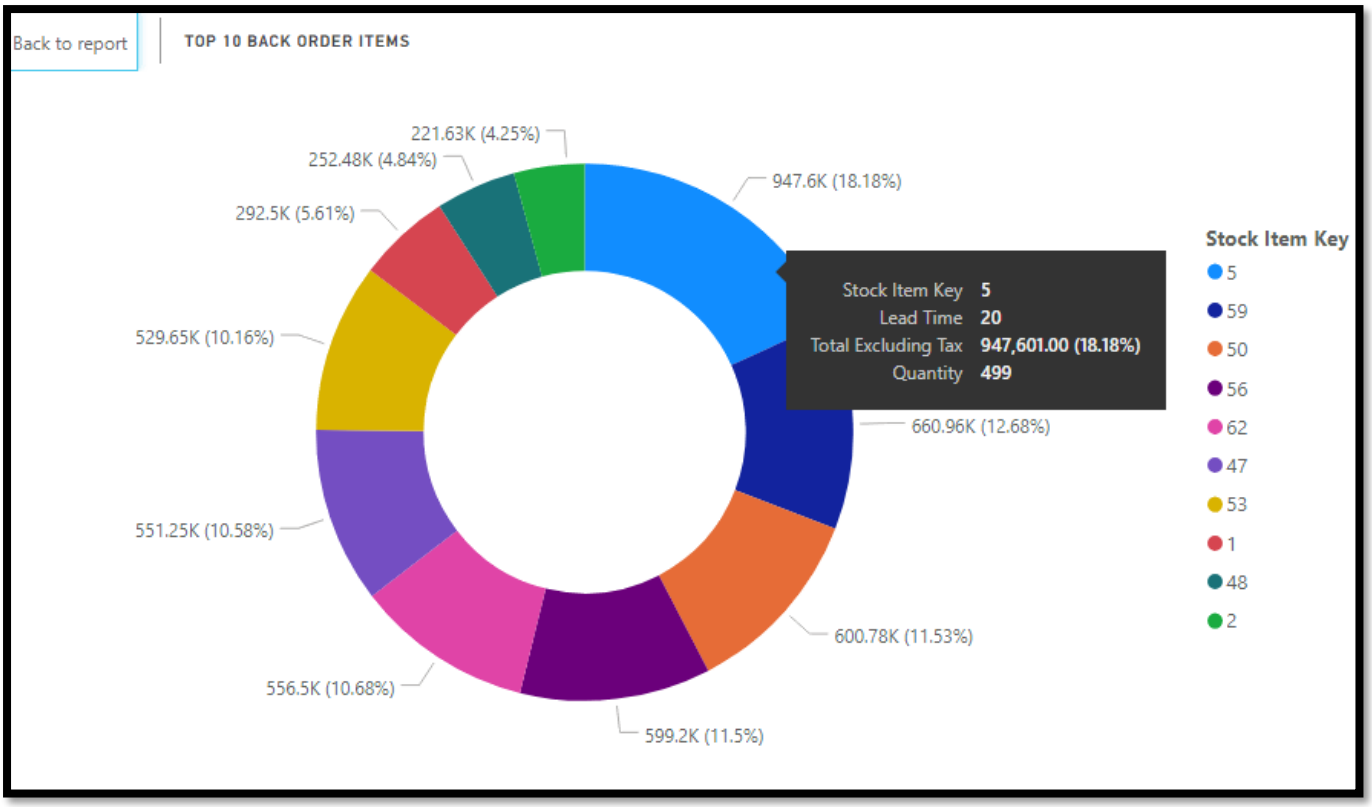
- Later upon on a successful pilot, the price can be for those items through-out, and the rest of the 10 items can be taken in as pilots to follow the suit.
- Taking such cautions while taking these decisions is a must for a successful price increase.

Backorder Analysis:

The number of backorders represent the overall health of the supply chain. Backorders can cause major risk to revenue, CSAT and brand recognition. Here, we look at the amount, the items, and the quantities that are in back-orders.

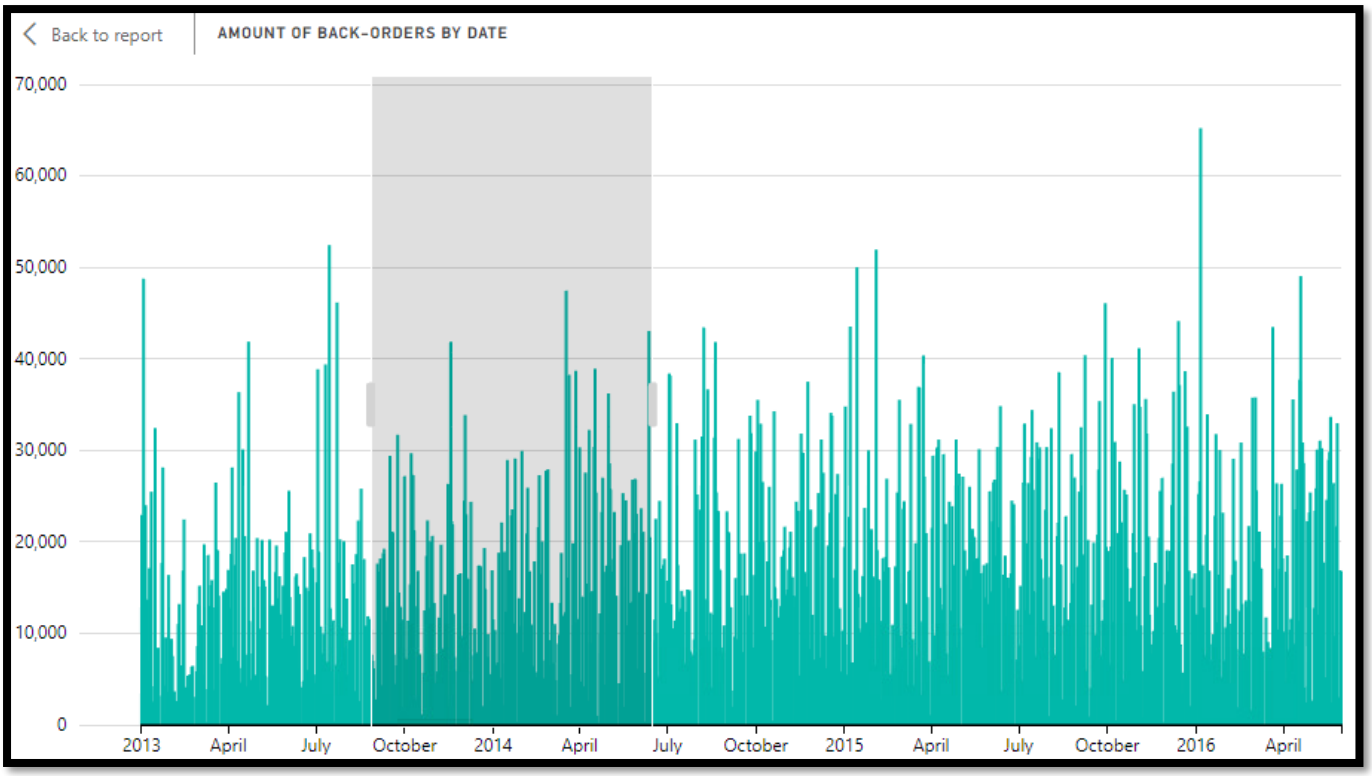
Stock Item Key	Lead Time	Quantity	Total Excluding Tax	Description
5	20	499	947,601.00	Air cushion machine (Blue)
59	14	6120	660,960.00	20 mm Double sided bubble wrap 50m
50	14	5890	600,780.00	20 mm Anti static bubble wrap (Blue) 50m
56	14	5350	599,200.00	32 mm Double sided bubble wrap 50m
62	14	5300	556,500.00	10 mm Double sided bubble wrap 50m
47	14	5250	551,250.00	32 mm Anti static bubble wrap (Blue) 50m
53	14	5350	529,650.00	10 mm Anti static bubble wrap (Blue) 50m
1	14	5850	292,500.00	Void fill 400 L bag (White) 400L
48	14	5260	252,480.00	32 mm Anti static bubble wrap (Blue) 20m
2	14	5910	221,625.00	Void fill 300 L bag (White) 300L
57	14	5720	211,640.00	32 mm Double sided bubble wrap 20m
51	14	4610	207,450.00	20 mm Anti static bubble wrap (Blue) 20m
145	14	588	202,860.00	Ride on big wheel monster truck (Black) 1/12 scale
15	20	6280	200,960.00	Tape dispenser (Blue)
54	14	4690	196,980.00	10 mm Anti static bubble wrap (Blue) 20m
60	14	5290	174,570.00	20 mm Double sided bubble wrap 20m
49	14	4960	158,720.00	32 mm Anti static bubble wrap (Blue) 10m
17	20	4780	152,960.00	Tape dispenser (Black)
55	14	5640	146,640.00	10 mm Anti static bubble wrap (Blue) 10m
146	14	508	144,780.00	Ride on vintage American toy coupe (Black) 1/12 scale
123	7	8004	144,072.00	"The Gu" red shirt XML tag t-shirt (Black) 3XL
Total		**806729**	**15,581,830.35**	

This table helps us easily get to the data on the backorders. It is sorted based on the item leading to highest amount of revenue being at risk. We can also select any item from here, that can give us other details such as amount at risk at a specific time.



This gives us a better idea of top 10 items that are causing a backorder.

- Stock item 5, with close a million dollars, is leading to the back-orders. We also get the information such as lead time, Total revenue at risk, and the quantity that led to a back order.
- Prior to selecting to 10 gave an idea of the backorder history, and only around 8 items are causing more than 25% of the back orders.



This gives an idea of the backorders based on the time. This chart is particularly helpful when analyzing the back orders based in a particular time frame.

Output & Recommendations:

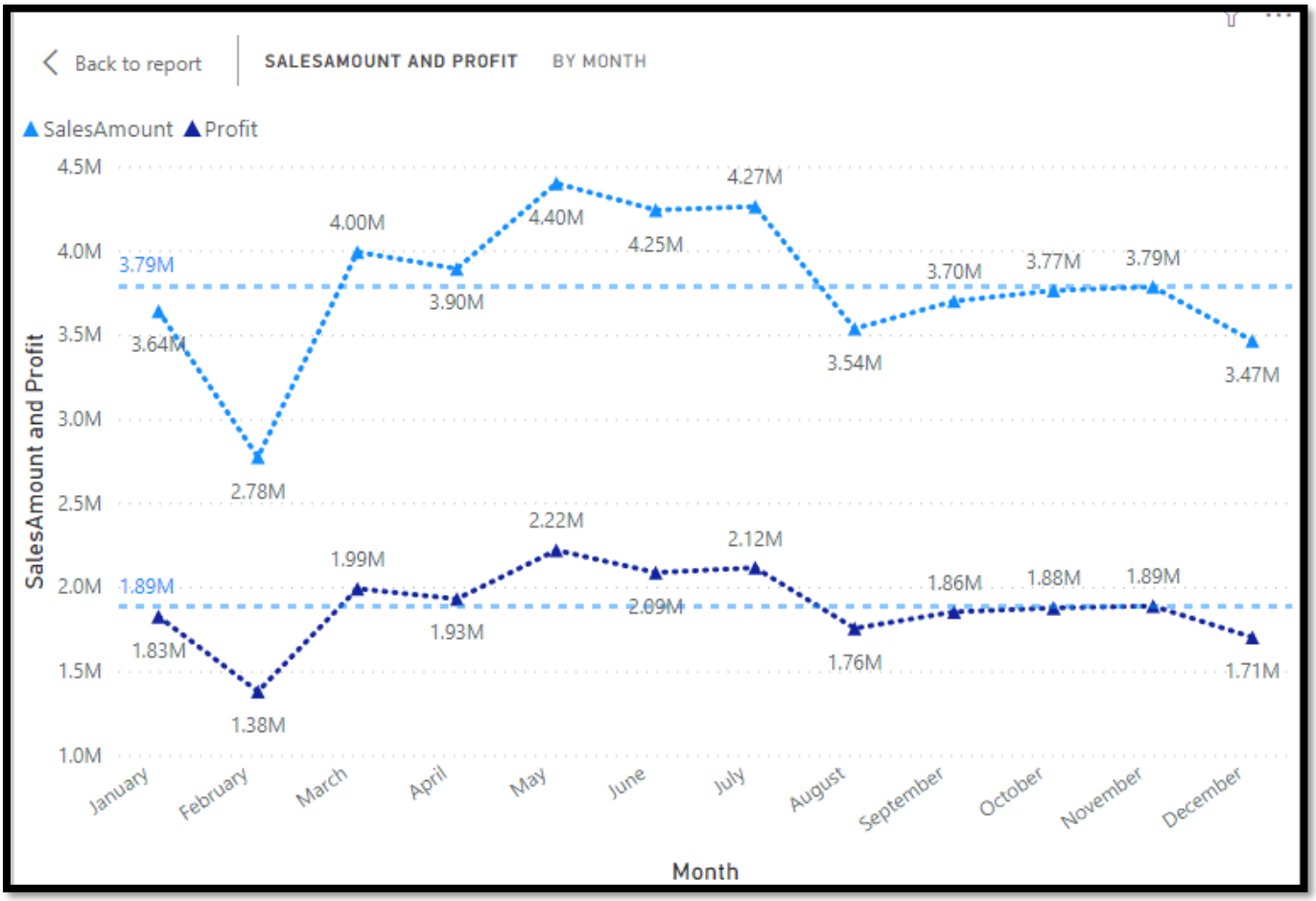
As close to 3.35 million dollars of revenue is at risk, handling such things is highly important task for the company. Here are the recommendations:

- Based on observing the lead time of some items, such as Air Cushion Machine, 20 days, and the amount of back orders suggest that it is an order to make item. Capacity planning can be done ahead to meet the requirements.
- Most of the items resulting back orders have a lead time more than 7 days, and having an optimized supply chain can reduce the lead times.
- As 15.5 million dollars are under back orders, efficient inventory management is necessary to the survival and healthy progression of the organization.

DATA PATTERNS & RECOMMENDATIONS

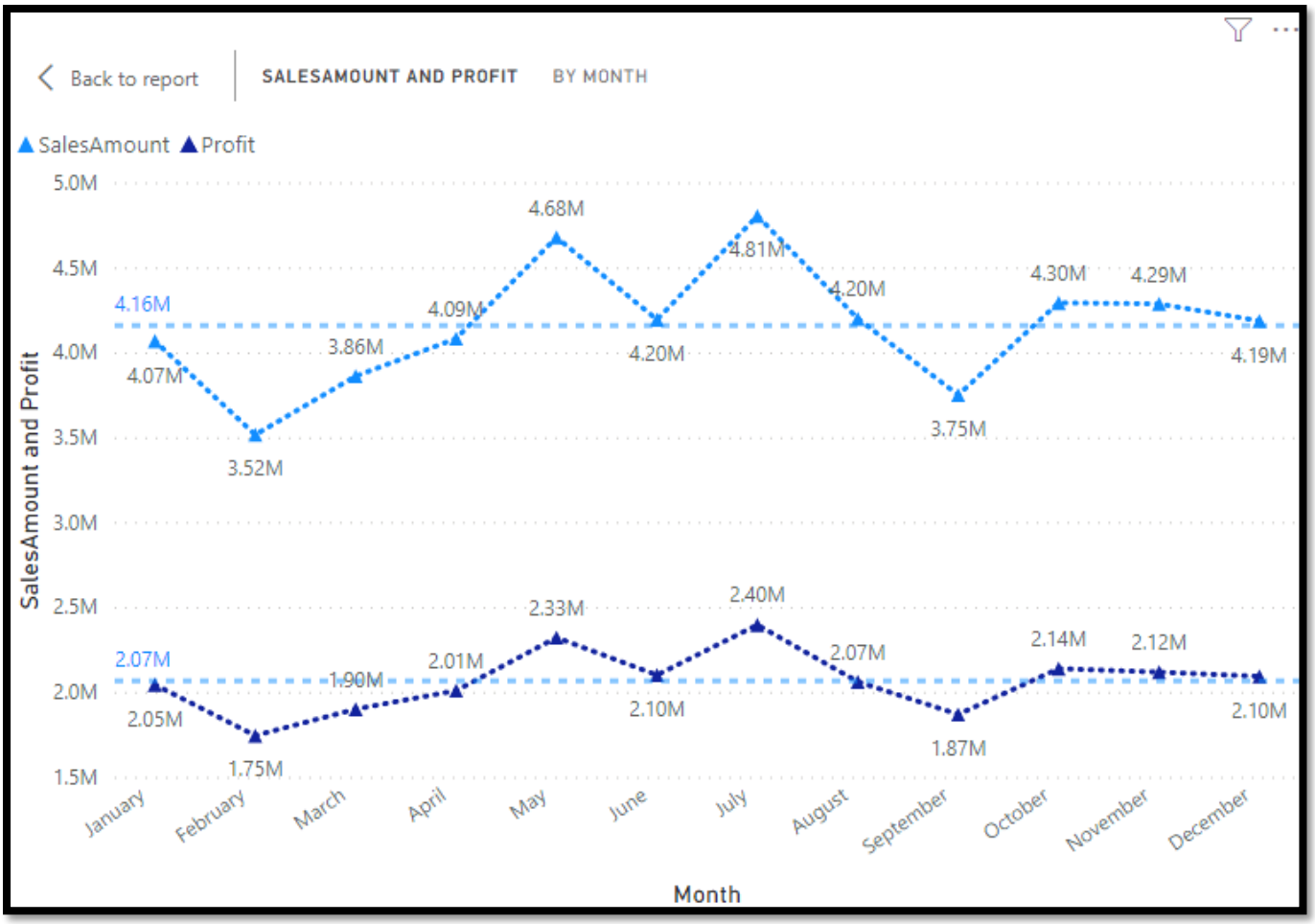
Monthly Sales & Profit trends over the years:

2013:



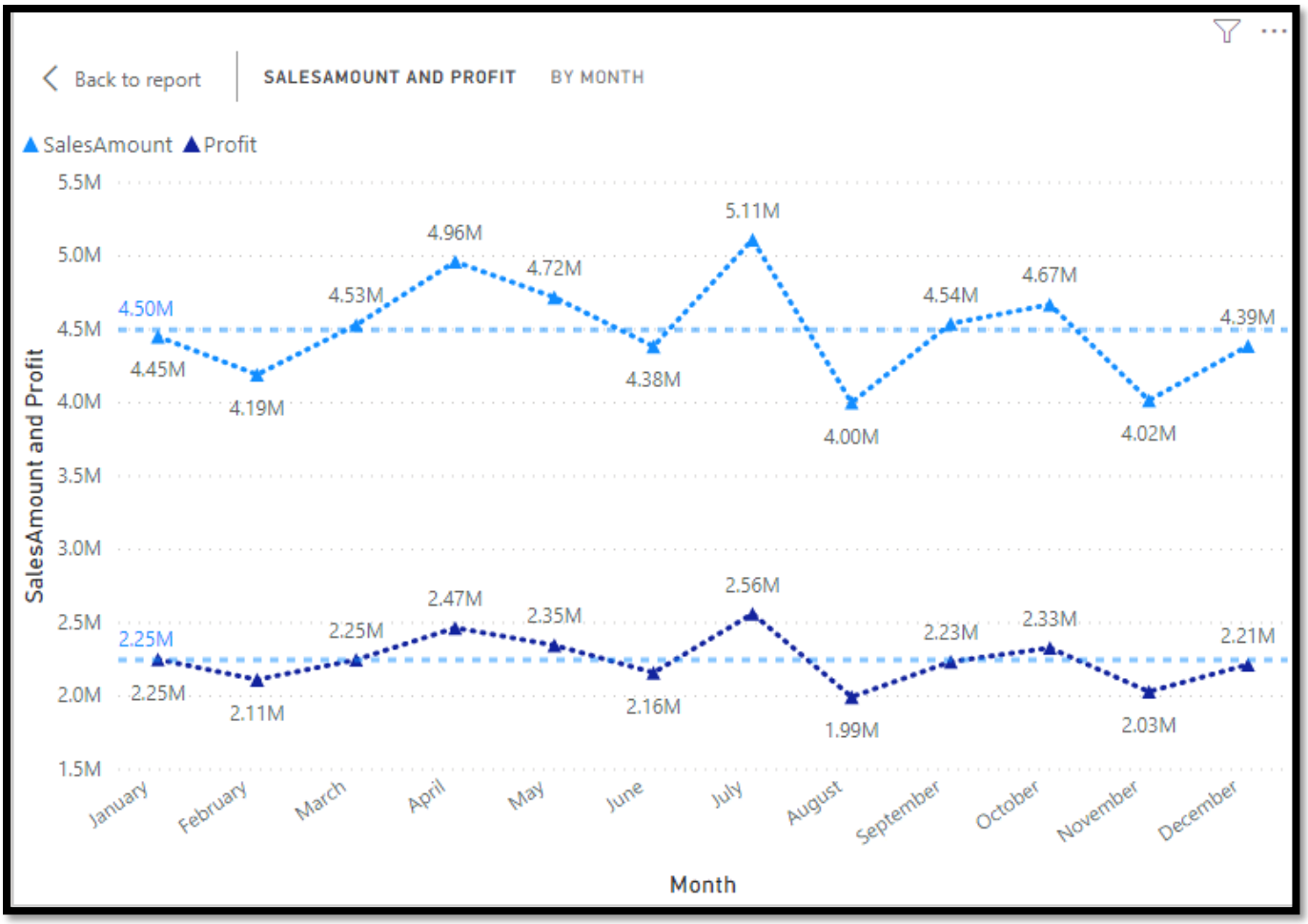
- Maximum Sales and Profits recorded in the month of July (sales=$4.27M, Profit=$2.12M)
- Minimum Sales and Profits recorded in the month of February (sales=$2.78M, Profit=$1.38M)
- Average Sales is $3.79M and the profit is $1.89M

2014:



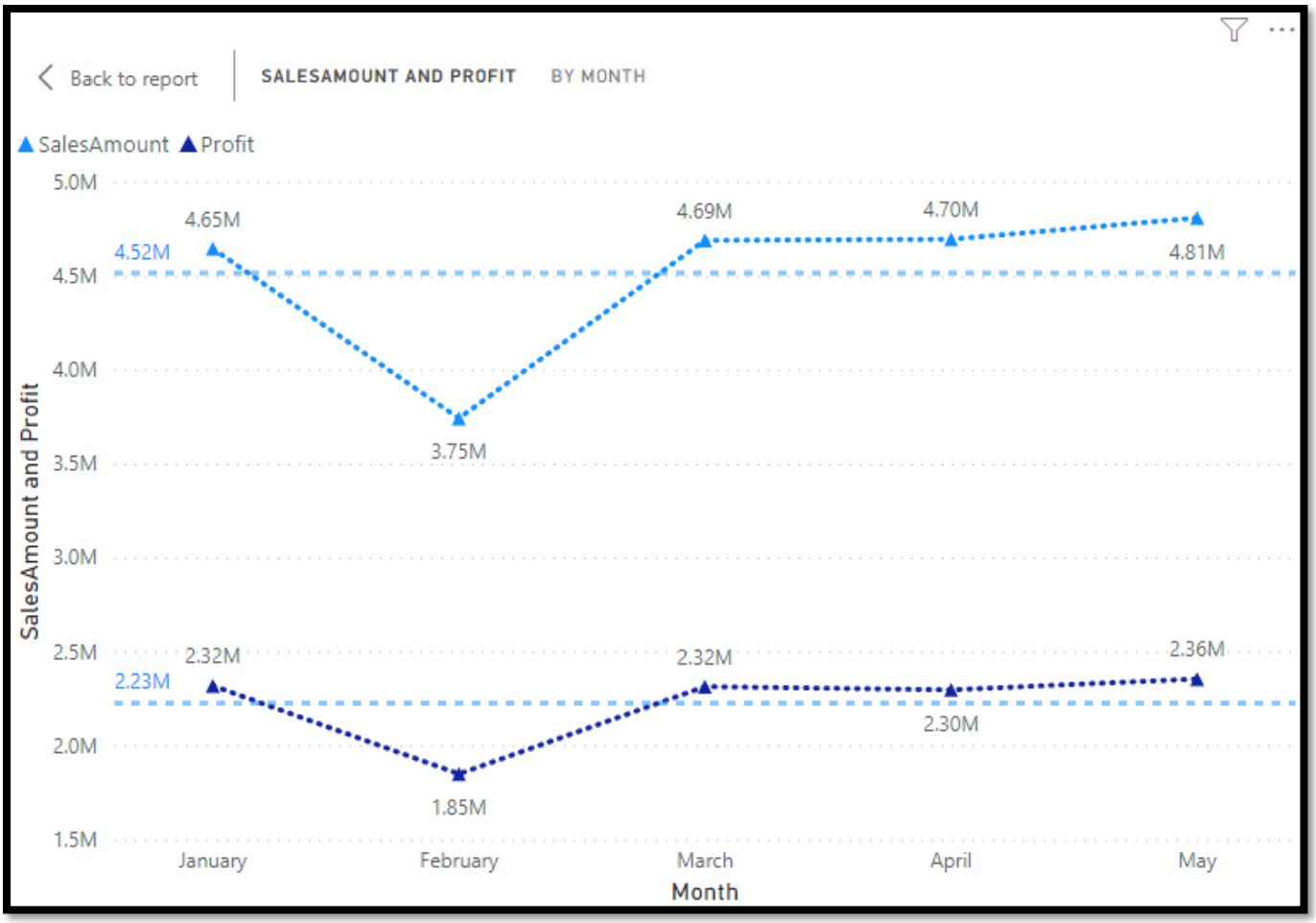
- Maximum Sales and Profits recorded in the month of July (sales=$4.81M, Profit=$2.40M)
- Minimum Sales and Profits recorded in the month of February (sales=$3.52M, Profit=$1.75M)
- Average Sales is $4.16M and the profit is $2.07M

2015:



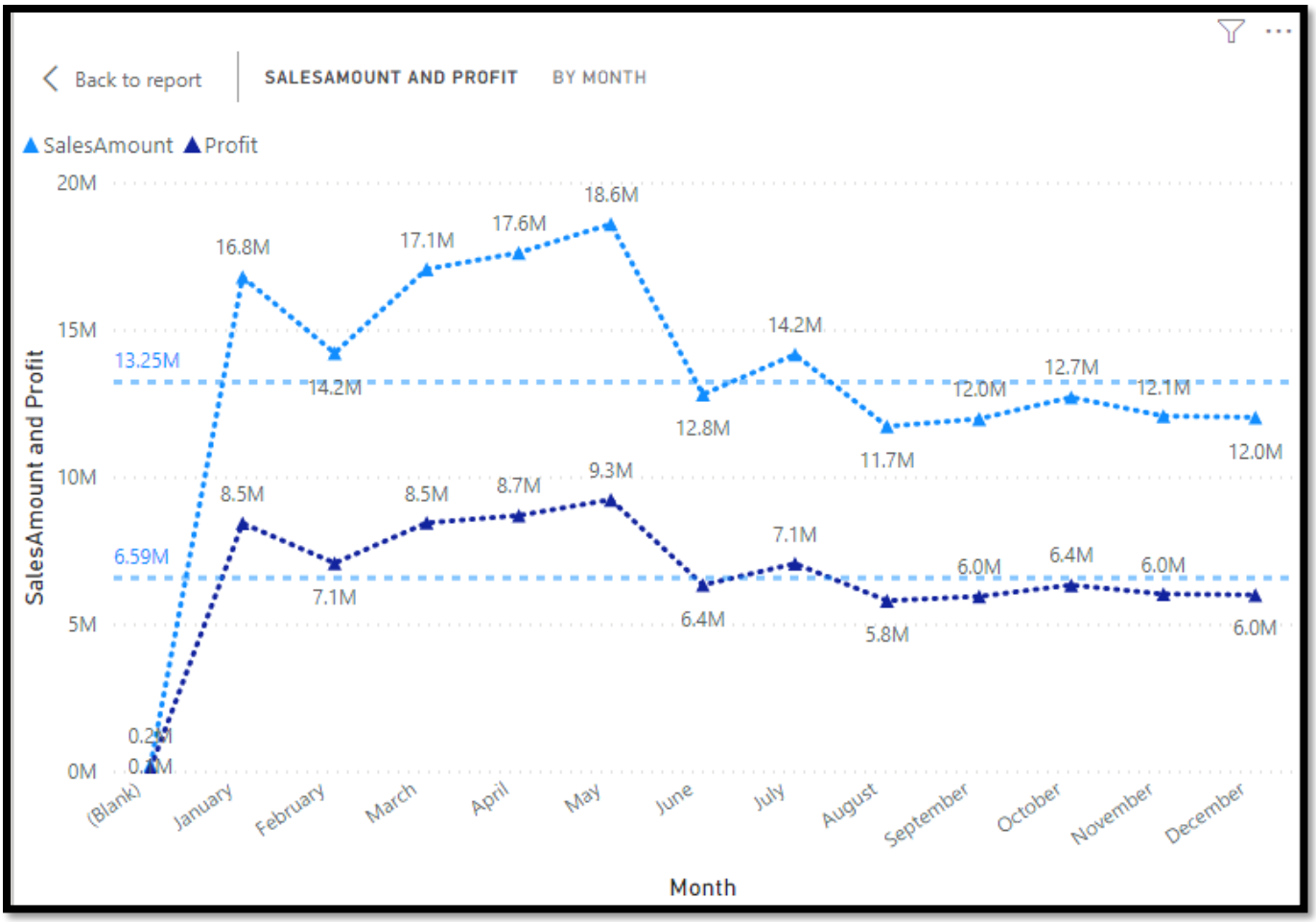
- Maximum Sales and Profits recorded in the month of July (sales=$5.11M, Profit=$2.56M)
- Minimum Sales and Profits recorded in the month of August (sales=$4.00M, Profit=$1.99M)
- Average Sales is $4.50M and the profit is $2.25M

2016:



- Maximum Sales and Profits recorded in the month of May (sales=$4.81M, Profit=$2.36M)
- Minimum Sales and Profits recorded in the month of February (sales=$3.75M, Profit=$1.85M)
- Average Sales is $4.52M and the profit is $2.23M

Overall:



- Maximum Sales and Profits recorded in the month of May (sales=$18.6M, Profit=$9.3M)
- Minimum Sales and Profits recorded in the month of August (sales=$11.7M, Profit=$5.8M)
- Average Sales is $13.25M and the profit is $6.59M

Recommendations:

- Though the overall sales trends show that the maximum sales occur in month of May, but the actual maximum sales are happening in the month of July
- Minimum Sales are in the month of February
- In July, normally Americans tend to spend more money as there are huge deals and offers on Independence Day
- Company can make use of this time to attract more customers by efficient marketing techniques like promotions, assurances and percent-off discounts

- Implement proper sales plan by reducing the excess production during the month of February, examining the pricing strategies and concentrating on training the staffs, connecting with customers, creating some events will be beneficial

IMPROVEMENTS

Overall, the company is facing serious operational issues like high cost of inventory, a low rate of inventory turnover, high amount of obsolete inventory, Imbalanced lead times, credits to unknown customers and manual inventory stock taking, high amount of back orders, and poorly optimized supply chain. All these operational inefficiencies are indirectly affecting the revenue and profits of the company. So, in order to think of business

expansion, the company has to make sure the immediate operational problems are taken care of, along with securing the market position to plan for expansion.

Recommendations:

- Reduce the inventory holding costs.
- Source from more reputed suppliers with good enough service levels if not high.
- Implement a solid Information System, preferably an ERP to automate several processes such as material/inventory management, production scheduling, asset tracking, supplier management and CRM.
- Many products have high price gaps of up to 90% low from the recommended price. Increase the items with high demand and price gap, to gain increased returns.
- Gradually align the processes to sell more of high profit products and
- Increase the target levels and reorder levels for the high demand products
- Implement better Analytical capabilities, which is essential to staying competitive. Making use of the statistical models, business intelligence and machine learning to predict capacity planning, sales drilled down to product level, to better manage the Supply chain from sourcing to delivery.
- Goods should be sold in the FIFO approach as they were purchased
- Identifying less utilized stock items by tracking item movement, and making sure to correct it in the mathematical models so the mistake is not repeated.
- Clearly identify the potential customers and their interests to improves sales
- Develop the competitive advantage by focusing on the benefits that makes products different from others
- Use the social media marketing to have more access to the channels and qualified leads

REFERENCES

https://www.vendhq.com/blog/increase-profit-margins/

https://www.linkedin.com/pulse/what-lead-time-why-important-how-do-you-reduce-roland-lester/

https://www.investopedia.com/terms/d/dso.asp

https://dataedo.com/samples/html/WideWorldImportersDW/doc/WideWorldImportersDW_6/tables/Fact_Transaction_3858.html

https://docs.microsoft.com/en-us/sql/samples/wide-world-importers-what-is?view=sql-server-ver15