

Computation of Business

using Excel



Executive Summary

The dataset taken for the project belongs to an anonymous company in the e-commerce industry. The data by itself helps us understand the characteristics and attributes of the business as a whole. We have undertaken certain ways in which we can give a birds view of the business and to help the business take key decisions pertaining to expansion and growth. For our analysis, we have considered a few dashboards which would help the decision makers wholistically understand the business in the year 2018. We have also utilized What-If Analysis, Scenario Manager, Decision Optimization and Demand Forecasting to help us analyse various present and future scenarios of the business. Besides this, we have also developed a Recommendation System based on the demand for the products in each category and a manual system which helps a business executive to manually enter data into the database and print the same.

We have conducted our analysis with a clear motive to help the decision makers understand the current standings and take key decisions like expansion to new geographical locations, development and launch of an app and so many other key decisions.

Introduction

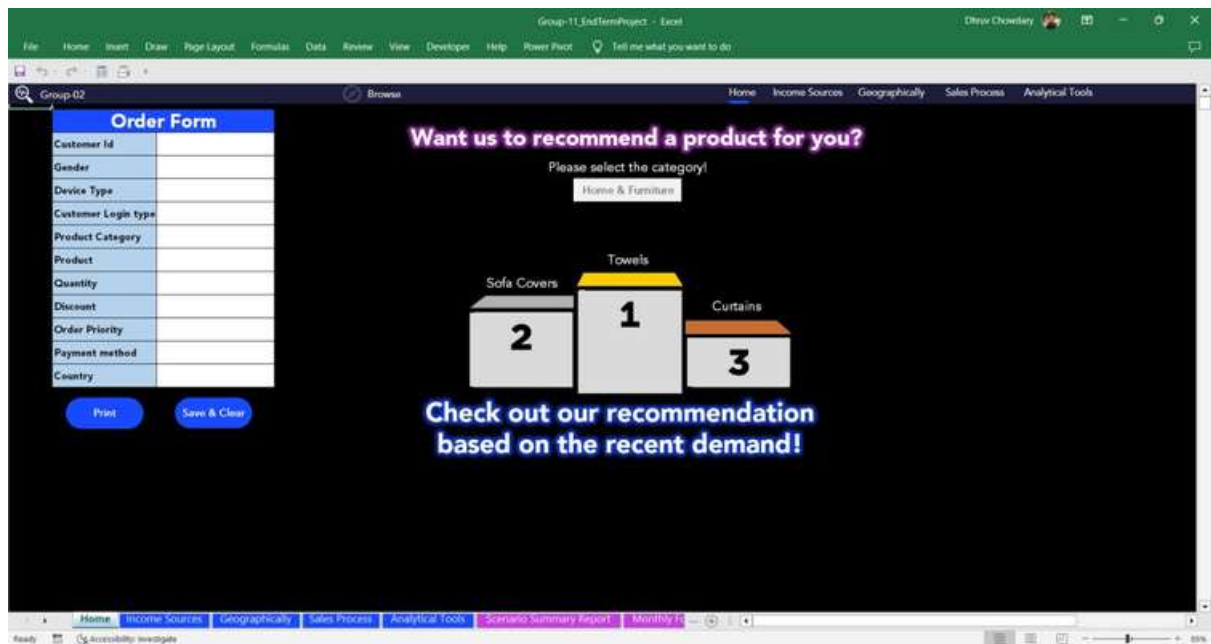
Business Overview

The data set is the property of an unnamed e-commerce corporation. Even if the business is unknown, the data by itself reveals a lot about it. The information gathered for business computation belongs to the year 2018. We can notice that the company has a wide range of products spread across four categories: Auto & Accessories, Fashion, Electronic and Home & Furniture. We can better understand our clients and sales thanks to the data. We are able to identify our clients and leads based on their gender, the device they use to connect with our platform, their membership status, and the place they want their orders delivered. With an awareness of the desired payment method and the priority at which the item is required to be delivered to the customer, the data also enables us to comprehend the actual and discounted sales made throughout the year.

Business Requirement

The company is currently looking to grow and make some changes to how things are done. In order to expand its reach and deepen its relationship with its customers, it plans to make its e-commerce platform more mobile-responsive and anticipates creating and releasing an app in the upcoming year. In order to understand what kind of customers to market to and target, it also wants to analyse the type of clients it now has.

Outcomes of the Project

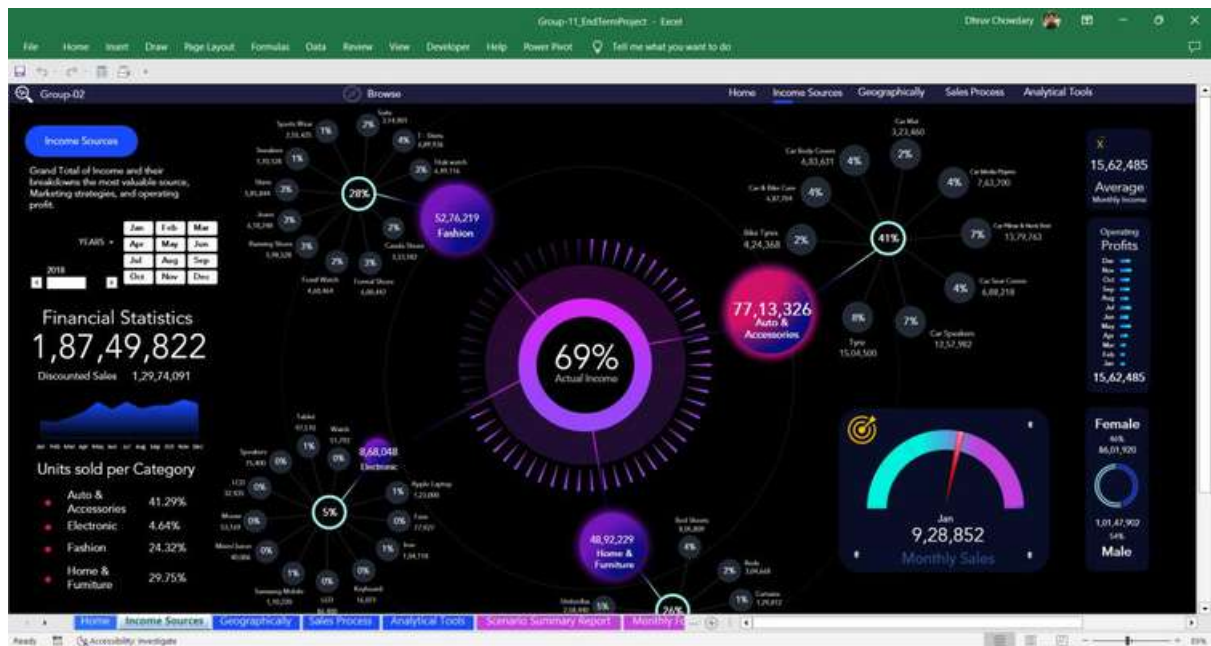


The Home screen includes a Manual System which helps the user enter data of the customer where if the customer Id is not entered, a random Id is generated and taken and product of only

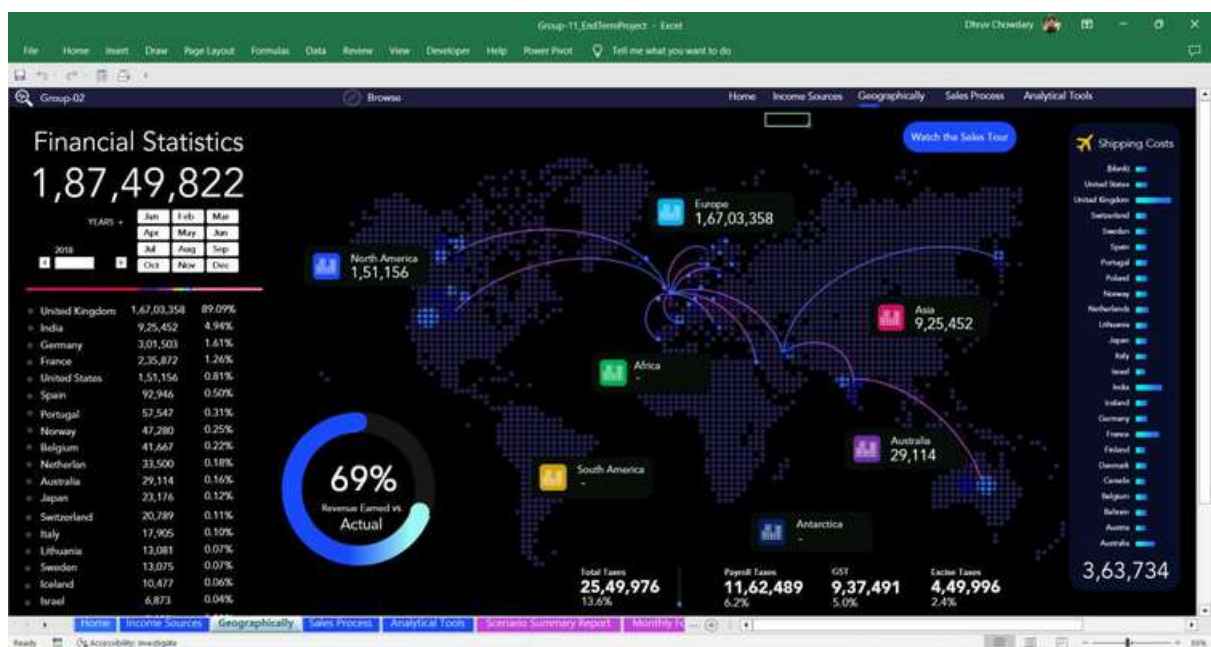
that category will be allowed. The system helps in either printing the form or saving it in our database.

The Home Screen also includes a recommendation system which would help the user gain insights about the top 3 products we could recommend a customer based on the demand in 2018. The following are the top 3 products in its respective product category:

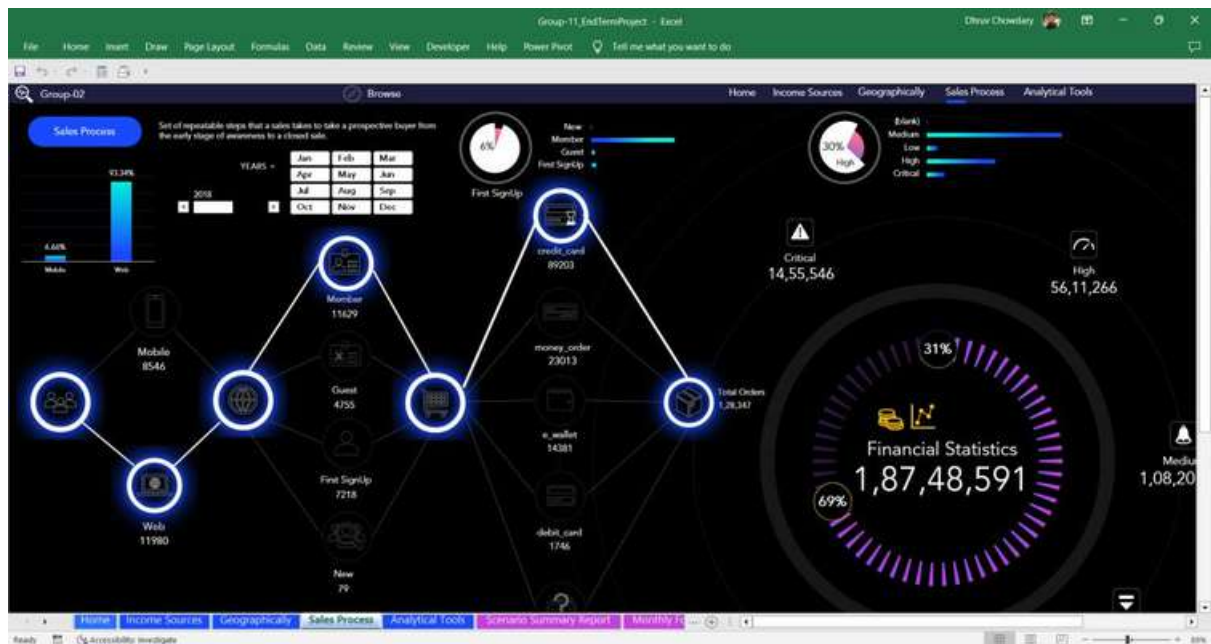
Product Category	Top 1	Top 2	Top 3
Auto & Accessories	Bike Tyres	Tyre	Car Seat Covers
Fashion	Fossil Watch	Suits	T-Shirts
Electronic	Samsung Mobile	Iron	Tablet
Home & Furniture	Towels	Sofa Covers	Curtains



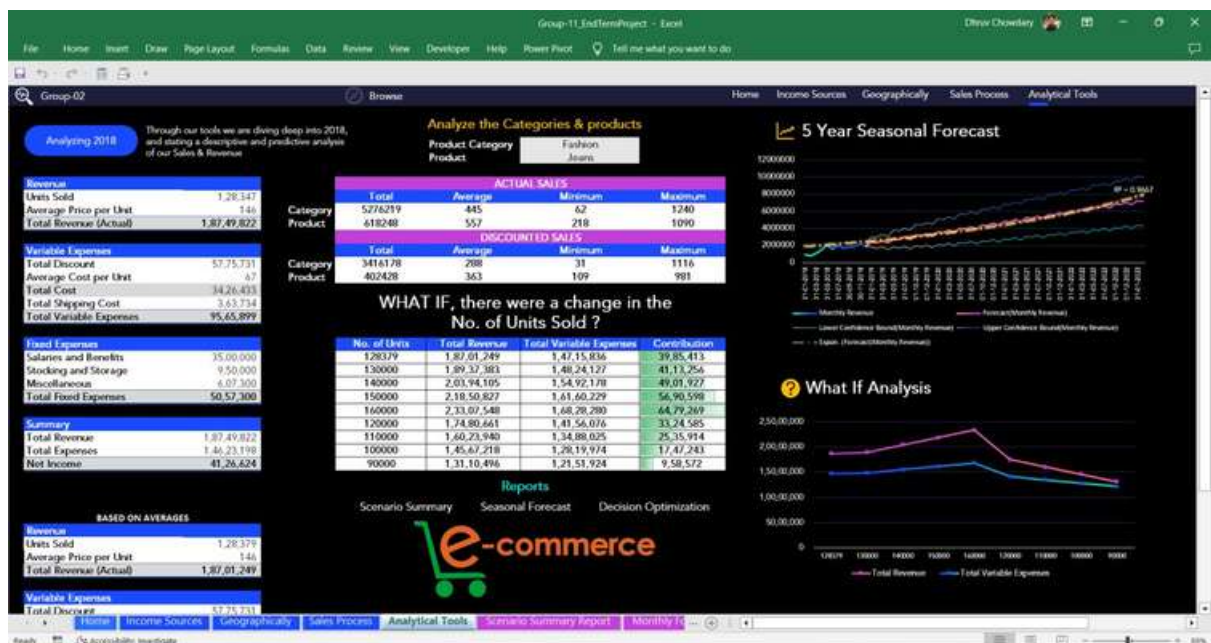
The above dashboard gives an overview of the Income Sources of the business. The Web Chart helps us understand the contribution of each product category towards the annual sales with Auto & Accessories being the leading category. We can also have a deeper view by using the filter to analyse the status on a monthly basis. The dashboard also gives the Monthly generation of Operating Profits and gender diversification of our customer base. We could also notice that, overall 31% of our Sales Revenue is being utilized by Discount.



The Geographical Dashboard helps us understand the concentration of sales in various countries across the globe. Throughout the calendar year, we could find United Kingdom dominating the Sales, however, we could notice India topping the sales chart in December 2018.

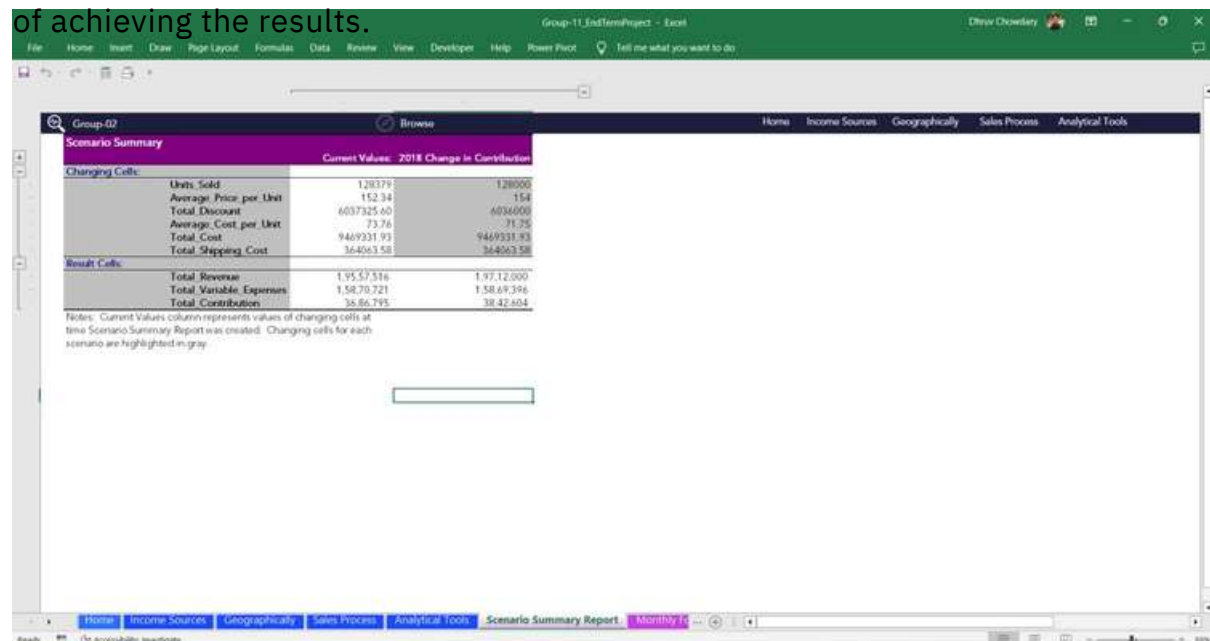


The Sales Process Dashboard helps us gain an overview on the maximum used touchpoints or types during the checkout process. Here, we could observe that throughout 2018, maximum customers preferred Web to interact with our platform, with highest being our own members preferring credit card as their payment method. We could also find that most of our orders were on medium priority in 2018.



The Analytical Tools Dashboard financially summarizes operations in 2018. We can analyse the sales category and product wise. We have also generated a What-If Analysis report to gain a purview on the potential revenue earned, expense incurred and the resultant contribution gained. The What-If Analysis is formulated based on Average Price and Cost per unit as we have a wide array of offerings. The 5 Year Seasonal Forecast helps us predict our Monthly

Revenue for the next 5 years. Since we get an R2 value of 0.9667, we can infer that our prediction model holds a great significance & there is a high possibility of achieving the results.

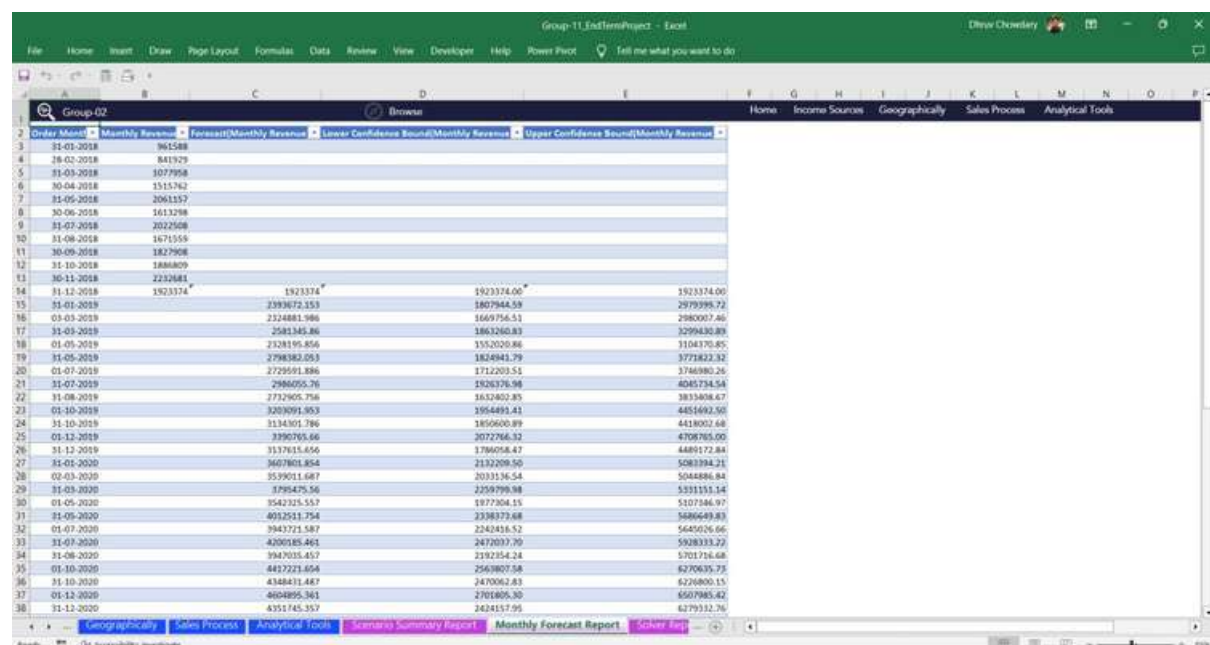


The screenshot shows the 'Scenario Summary' report in Excel. It displays a table with columns for 'Current Values' and '2018 Change in Contribution'. The table is divided into 'Changing Cells' and 'Result Cells'.

Changing Cells		Current Values	2018 Change in Contribution
Units Sold	120379	128000	
Average Price per Unit	152.34	154	
Total Discount	6037325.60	6034000	
Average Cost per Unit	73.76	71.75	
Total Cost	9409331.93	9449331.93	
Total Shipping Cost	364063.58	364063.58	
Result Cells			
Total Revenue	1,95,57,516	1,97,12,000	
Total Variable Expenses	1,58,70,721	1,58,69,396	
Total Contribution	36,86,795	38,42,604	

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

The Scenario Report here helps us understand the implications on the Total Revenue, Variable Expenses and Contribution with changes made in the number of units sold, average price per unit, total discount, average cost per unit incurred, total and shipping cost incurred. However, we could not find any effective increase in the contribution with the wanted changes to be made.



The screenshot shows the 'Monthly Forecast Report' in Excel. It displays a table with columns for 'Order Month', 'Monthly Revenue', 'Forecast/Monthly Revenue', 'Lower Confidence Bound/Monthly Revenue', and 'Upper Confidence Bound/Monthly Revenue'. The table lists data from 2019 to 2023.

Order Month	Monthly Revenue	Forecast/Monthly Revenue	Lower Confidence Bound/Monthly Revenue	Upper Confidence Bound/Monthly Revenue
31-01-2019	361588			
28-02-2019	841929			
31-03-2019	3077958			
30-04-2019	1515762			
31-05-2019	2061157			
30-06-2019	1613298			
31-07-2019	2022508			
31-08-2019	1671555			
30-09-2019	1827958			
31-10-2019	1888809			
30-11-2019	2232681			
31-12-2019	1923374			
31-01-2020		1923374	1923374.00	1923374.00
28-02-2020		2393672.353	1807944.59	2979398.72
31-03-2020		2324881.986	1669756.53	2980907.46
31-04-2020		2582345.86	1863260.83	3299430.89
01-05-2020		2328195.856	1552020.86	3104370.85
31-05-2020		2798382.053	1824941.79	3771822.32
01-07-2020		2729591.886	1712203.51	3768980.26
31-07-2020		2986055.76	1926376.98	4045734.54
31-08-2020		2722905.758	1823402.85	3813408.67
31-10-2020		3203091.903	1954491.41	4451692.50
31-11-2020		3134301.786	1850600.89	4418002.68
01-12-2020		3390765.66	2072766.32	4708765.00
31-12-2020		3137615.656	1786098.47	4489172.84
31-01-2021		3607601.854	2182208.56	5083394.21
02-03-2021		3539011.687	2031136.54	504886.84
31-03-2021		3795475.56	2259799.98	5331151.14
01-05-2021		3542325.557	1977304.15	5107346.97
31-05-2021		4012521.754	2338373.68	5686649.83
01-07-2021		3943721.587	2242431.52	5645026.66
31-07-2021		4260185.461	2472097.79	5928313.22
31-08-2021		3943010.457	2182554.24	5701746.68
01-10-2021		4472221.654	2563807.58	6270635.73
31-11-2021		4348411.447	2470062.83	6220800.15
01-12-2021		4604895.361	2701809.30	6507985.42
31-12-2021		4351745.357	2424157.95	6279312.76

The table above includes all the predicted values of the Monthly revenue from 2019-2023. The table also gives an upper and lower bound to our prediction.

Group-11_EndTermProject - Excel

File Home Insert Draw Page Layout Formulas Data Review View Developer Help Power Pivot Tell me what you want to do

Group-02

Microsoft Excel 16.0 Answer Report

Worksheet: [Group-11_EndTermProject.xlsx]Inventory_Data

Report Created: 17-12-2022 11:40:52

Result: Solver found a solution. All Constraints and optimality conditions are satisfied.

Solver Engine

Engine: Simplex LP

Solution Time: 1.203 Seconds

Iterations: 32 Subproblems: 0

Solver Options

Max Time Unlimited, Iterations Unlimited, Precision 0.000001

Max Subproblems Unlimited, Max Integer Sols Unlimited, Integer Tolerance 1%, Assume NonNegative

Objective Cell (Max)

Cell	Name	Original Value	Final Value
\$B\$45	Total Contribution	20884041	34682154

Variable Cells

Cell	Name	Original Value	Final Value	Integer
\$D\$3:\$D\$44				
\$D\$3	Car Media Players Units Sold	5455	6132	Integer
\$D\$4	Car Speakers Units Sold	5962	6347	Integer
\$D\$5	Car Body Covers Units Sold	5843	6448	Integer
\$D\$6	Car & Bike Care Units Sold	5828	6401	Integer
\$D\$7	Tyre Units Sold	6018	7271	Integer
\$D\$8	Bike Tyres Units Sold	5894	6449	Integer
\$D\$9	Car Mat Units Sold	5990	0	Integer
\$D\$10	Car Seat Covers Units Sold	6037	6273	Integer
\$D\$11	Car Pillow & Neck Rest Units Sold	5973	6349	Integer
\$D\$12	Shirts Units Sold	2989	6120	Integer
\$D\$13	Jeans Units Sold	2816	6354	Integer
\$D\$14	Suits Units Sold	2689	6333	Integer
\$D\$15	Sports Wear Units Sold	3095	6250	Integer
\$D\$16	Casual Shoes Units Sold	2731	0	Integer
\$D\$17	Running Shoes Units Sold	2672	5279	Integer
\$D\$18	Formal Shoes Units Sold	2819	6191	Integer

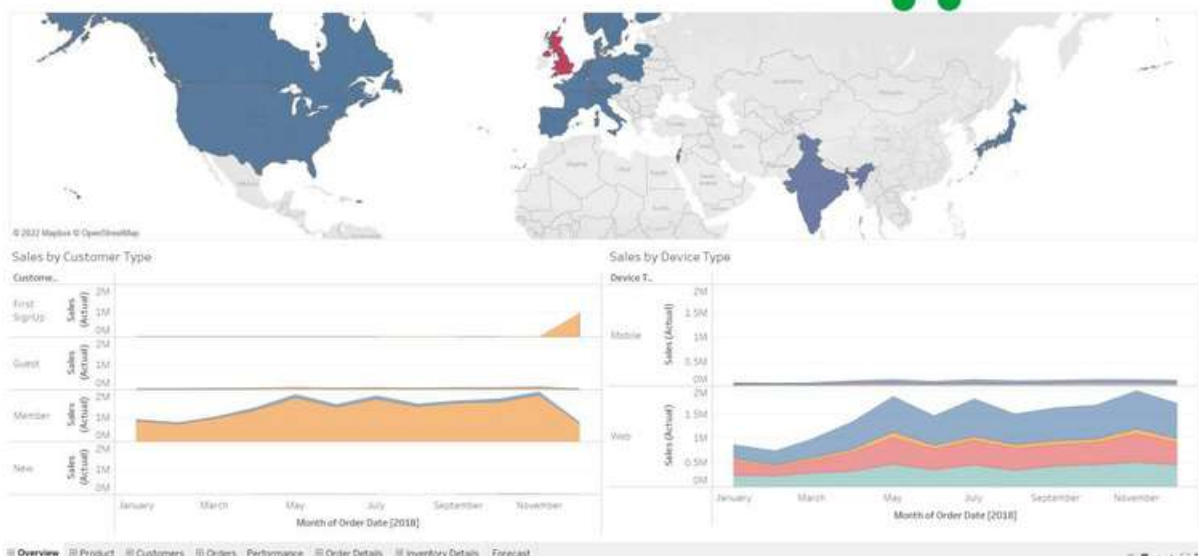
Sales Process Analytical Tools Scenario Summary Report Monthly Forecast Report Solver Report Orders_Data

We have also utilized the Solver in Excel to make an optimal decision on the amount of sales we can make with a certain target in the coming year. We have concluded that we can expect a maximum revenue of 3,46,82,154 with a sale of 140000 units across all the products in various product categories. With a constraint on capping the highest number of units to be sold, and the current inventory data we were able to find 31 products acting as a binding constraint with the products reaching the minimum inventory value of 10 units.

To have a dynamic dashboard of our business, we have also created the following dashboards and sheets in Tableau:

Executive Overview

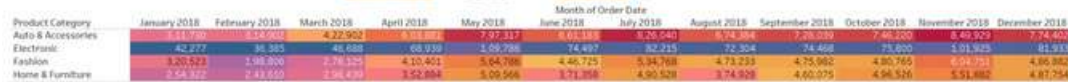
Cost	Profit	Sales (Actual)	Sales (Discounted)	Shipping Cost	Units Sold
3,425,764	4,356,869	18,745,765	12,971,056	363,633	128,347



Based on the overview dashboard, we could infer that sales are highly concentrated in United Kingdom, followed by India and maximum sales are done to our members with peaks in May and November and highest use of web has also been noticed in the same months.

Product Drill Down

Sales by Product Category

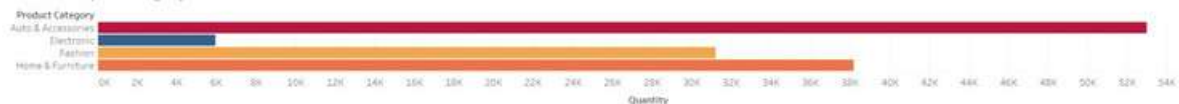


Product Category (Inventory)	Quantity in Stock	Units Sold	Closing Inventory
Auto & Accessories	59,026	53,050	3,028
Electronic	11,152	5,950	5,202
Fashion	69,164	31,230	37,954
Home & Furniture	43,093	38,187	4,906

Sales & Profit by Product and Category



Units Sold per Category



Overview Product Customers Orders Performance Order Details Inventory Details Forecast

The Product Drilldown Dashboard helps us deep dive into the sales of each and every product in their respective categories on a monthly basis.

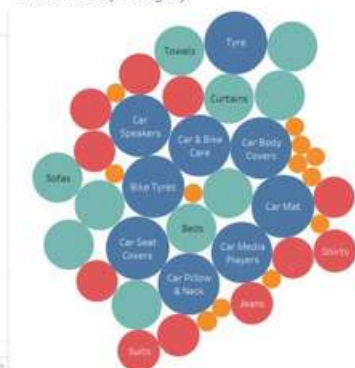
Customer Analysis



Sales & Profit by Gender



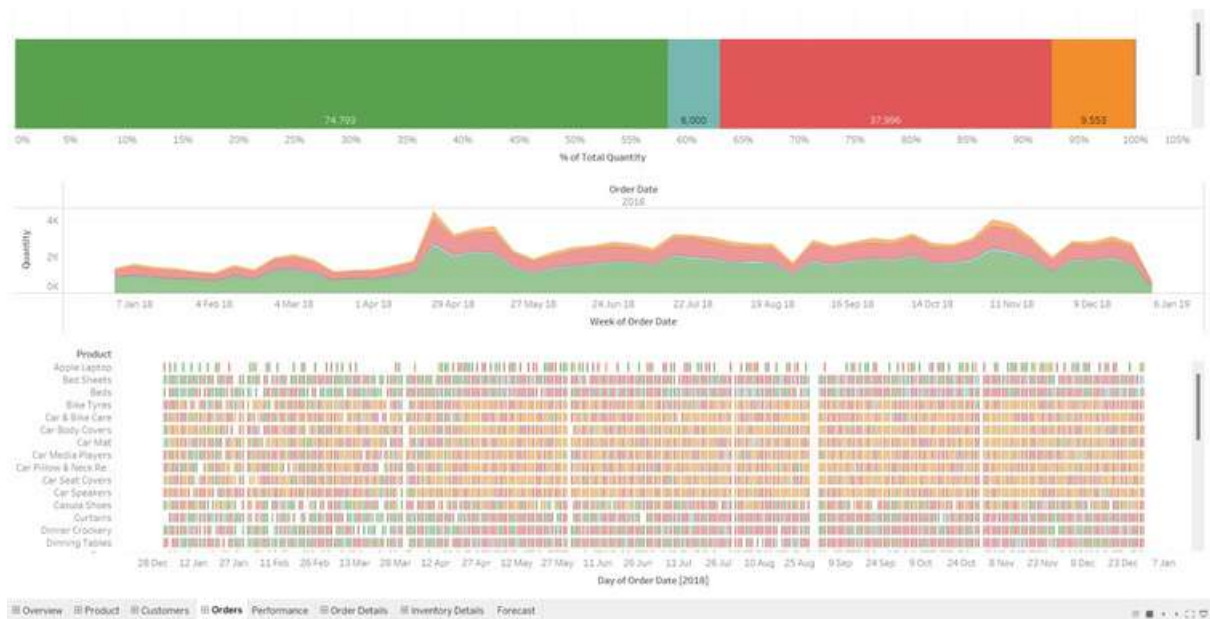
Customers by Category



Overview Product Customers Orders Performance Order Details Inventory Details Forecast

The Customer Analysis Dashboard helps us identify the prominent trends amongst our customers and classify them by gender as well.

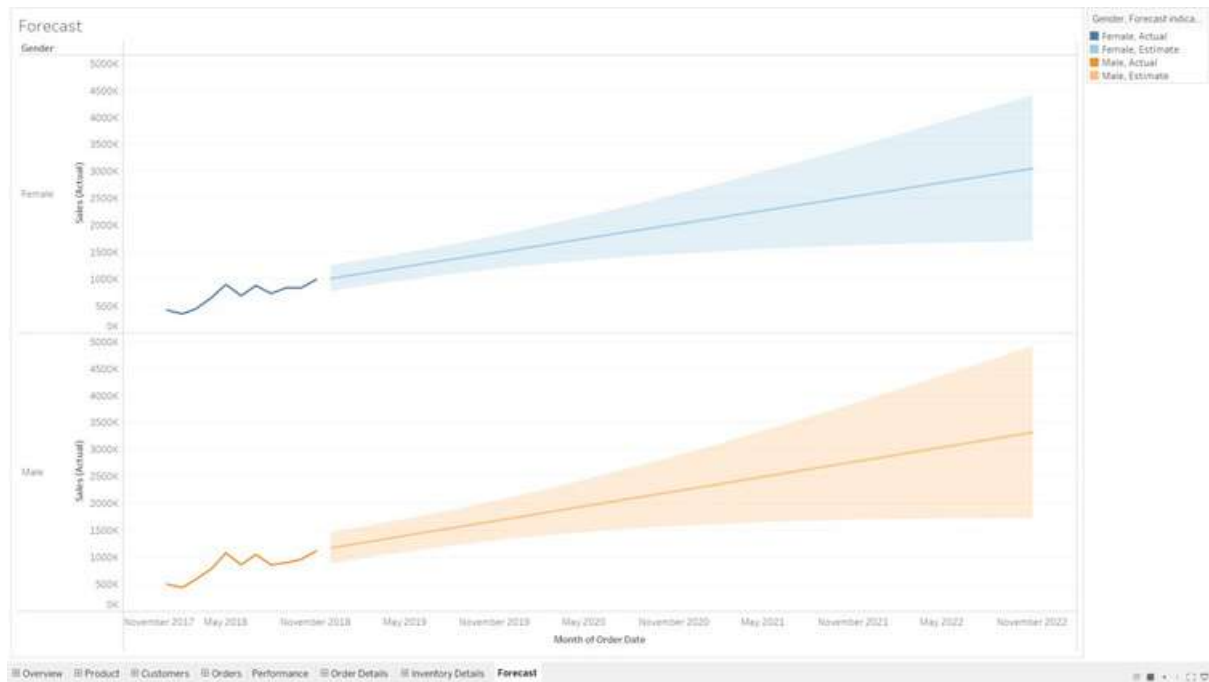
Order Trends



The Order Trend signifies the distribution of our products in their respective priorities. We could find a maximum share of units are sold with Medium Priority, followed by High Priority.



The Performance Dashboard shares the insight of demand of each category across each customer segment on a monthly basis. We can also filter the data to identify the metrics specific to each country.



Lastly the forecast Sheet helps us predict our sales for the next 4 years on a monthly basis. It also gives us range between the highest and lowest prediction.

[Let us have a bird eye view of our sales globally!](#)

Conclusions

Based our analysis and predictions, we would recommend the company to expand its bases to India and United States to minimize the shipping costs and have timely deliveries in the Asian and American countries respectively. Since there is a very high usage of web for interaction with our platform, we also recommend the company to make its platform mobile responsive and user friendly to make it easier for its customers to operate from their smart phone. Lastly, we see that this would be the perfect time to develop an app and launch it in the subsequent year. The app will attract more customers to engage with our platform on a regular basis. The app launch can be done in portions by releasing the Beta version in the end of the year to attract customers and get them accustomed to mobile use when app launch is made.