
Project Report Structure

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- **Project Title:** ExpressMart Sales Performance Analysis Project
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- **Date:** 13/10/2024

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3. Introduction

- **Project Objective:**

The object of the project is to analyze the ExpressMart Sales data to understand customer purchasing behavior and identify sales trends. Analysis drawn based on this project will improve decisions, optimize operations, enhance marketing, monitor sales trend in real time and business growth in general.

- **Scope:**

The dashboard has:

- I. five (5) slicers; AM/PM, Quarter, Month, Year & City, which helps in switching buttons to make the dashboard visually appealing.
- II. Six (6) diagrams with titles; Sales By Month, Sales By Quarter, Sales By City, Sales By Period Of Day, Top Five Products With Sales, Quantity Ordered By Hour. Each of these diagrams represents the sales Time, Location, or Product sold in ExpressMart.

Three (3) sections; Total Sales, Total Quantity, Total Product, which represent the grand total of each item on the dashboard



Fig.1.0

4. Data Preparation

• Data Source:

The dataset was provided by ExpressMart Which was compiled in two years (2019-2020). The data was far from perfect, which had eight (8) initial variables with it's inputs not in a standard format for analysis.

• Data Cleaning:

Even though the data was far from perfect, below are the steps I took to make sure the data was clean enough for analysis.

1. Microsoft excel was invaluable to change the data set to a table to clean it in Microsoft Power Query.
2. The dataset was transformed, i.e. the format of the Order Date and Time to a standard format to extract Quarter, Month and Year and also extract Hour, AM/PM from time respectively.
3. The cities were extracted from the Purchase address provided.
4. The cleaned data was then viewed to inspect the accuracy of the dataset, which had zero errors.
5. The cleaned data was then loaded onto a new sheet in Microsoft Excel for further analysis. Fortunately, there was no missing value to handle.

Order ID	Product	Quantity Ordered	Price	Order Date	Year	Month	Quarter	Purchase Address	City	Time	AM/PM	Hour	Sales
295665	Macbook Pro Laptop	1	1700	12/30/2019	2019	Dec	Qtr 4	136 Church St, New York City, NY 10001	New York City	12:01:00 AM	AM	0	1700
295666	LG Washing Machine	1	600	12/29/2019	2019	Dec	Qtr 4	562 2nd St, New York City, NY 10001	New York City	7:03:00 AM	AM	7	600
295667	USB-C Charging Cable	1	11.95	12/12/2019	2019	Dec	Qtr 4	277 Main St, New York City, NY 10001	New York City	6:21:00 PM	PM	18	11.95
295668	27in FHD Monitor	1	149.99	12/22/2019	2019	Dec	Qtr 4	410 6th St, San Francisco, CA 94016	San Francisco	3:13:00 PM	PM	15	149.99
295669	USB-C Charging Cable	1	11.95	12/18/2019	2019	Dec	Qtr 4	43 Hill St, Atlanta, GA 30301	Atlanta	12:38:00 PM	PM	12	11.95
295670	AA Batteries (4-pack)	1	3.84	12/31/2019	2019	Dec	Qtr 4	200 Jefferson St, New York City, NY 10001	New York City	10:58:00 PM	PM	22	3.84
295671	USB-C Charging Cable	1	11.95	12/16/2019	2019	Dec	Qtr 4	928 12th St, Portland, OR 97035	Portland	3:10:00 PM	PM	15	11.95
295672	USB-C Charging Cable	2	11.95	12/13/2019	2019	Dec	Qtr 4	813 Hickory St, Dallas, TX 75001	Dallas	9:29:00 AM	AM	9	23.9
295673	Bose SoundSport Headphones	1	99.99	12/15/2019	2019	Dec	Qtr 4	718 Wilson St, Dallas, TX 75001	Dallas	11:26:00 PM	PM	23	99.99
295674	AAA Batteries (4-pack)	4	2.99	12/28/2019	2019	Dec	Qtr 4	77 7th St, Dallas, TX 75001	Dallas	11:51:00 AM	AM	11	11.96
295675	USB-C Charging Cable	2	11.95	12/13/2019	2019	Dec	Qtr 4	594 1st St, San Francisco, CA 94016	San Francisco	1:52:00 PM	PM	13	23.9
295676	ThinkPad Laptop	1	999.99	12/28/2019	2019	Dec	Qtr 4	410 Lincoln St, Los Angeles, CA 90001	Los Angeles	5:19:00 PM	PM	17	999.99
295677	AA Batteries (4-pack)	2	3.84	12/20/2019	2019	Dec	Qtr 4	866 Pine St, Boston, MA 02215	Boston	7:19:00 PM	PM	19	7.68
295678	AAA Batteries (4-pack)	2	2.99	12/6/2019	2019	Dec	Qtr 4	187 Lincoln St, Dallas, TX 75001	Dallas	9:38:00 AM	AM	9	5.98
295679	USB-C Charging Cable	1	11.95	12/25/2019	2019	Dec	Qtr 4	902 2nd St, Dallas, TX 75001	Dallas	9:39:00 AM	AM	9	11.95
295680	Lightning Charging Cable	1	14.95	12/1/2019	2019	Dec	Qtr 4	338 Main St, Austin, TX 73301	Austin	2:30:00 PM	PM	14	14.95
295681	Google Phone	1	600	12/25/2019	2019	Dec	Qtr 4	79 Elm St, Boston, MA 02215	Boston	12:37:00 PM	PM	12	600
295681	USB-C Charging Cable	1	11.95	12/25/2019	2019	Dec	Qtr 4	79 Elm St, Boston, MA 02215	Boston	12:37:00 PM	PM	12	11.95
295681	Bose SoundSport Headphones	1	99.99	12/25/2019	2019	Dec	Qtr 4	79 Elm St, Boston, MA 02215	Boston	12:37:00 PM	PM	12	99.99
295682	Wired Headphones	1	11.99	12/25/2019	2019	Dec	Qtr 4	79 Elm St, Boston, MA 02215	Boston	12:37:00 PM	PM	12	11.99
295682	USB-C Charging Cable	1	11.95	12/23/2019	2019	Dec	Qtr 4	780 Elm St, Portland, OR 97035	Portland	7:25:00 PM	PM	19	11.95
295683	Wired Headphones	1	11.99	12/23/2019	2019	Dec	Qtr 4	341 Lake St, San Francisco, CA 94016	San Francisco	10:46:00 PM	PM	22	11.99
295684	AAA Batteries (4-pack)	4	2.99	12/4/2019	2019	Dec	Qtr 4	936 Church St, San Francisco, CA 94016	San Francisco	12:29:00 PM	PM	12	11.96
295685	Wired Headphones	1	11.99	12/11/2019	2019	Dec	Qtr 4	662 Ridge St, San Francisco, CA 94016	San Francisco	10:54:00 PM	PM	22	11.99
295686	USB-C Charging Cable	1	11.95	12/17/2019	2019	Dec	Qtr 4	573 Maple St, Portland, ME 04101	Portland	4:10:00 PM	PM	16	11.95
295687	Apple AirPods Headphones	1	150	12/10/2019	2019	Dec	Qtr 4	531 Ridge St, Boston, MA 02215	Boston	12:38:00 AM	AM	0	150
295688	Apple AirPods Headphones	1	150	12/8/2019	2019	Dec	Qtr 4	546 Park St, Los Angeles, CA 90001	Los Angeles	11:21:00 AM	AM	11	150
295689	LG Washing Machine	1	600	12/24/2019	2019	Dec	Qtr 4	173 Lake St, San Francisco, CA 94016	San Francisco	11:21:00 AM	AM	11	600
295690	Apple AirPods Headphones	1	150	12/4/2019	2019	Dec	Qtr 4	174 Cedar St, Seattle, WA 98101	Seattle	12:48:00 AM	AM	0	150

Fig.1.1

• Data Preparation:

Data Cleaning was a necessary step which transformed the raw dataset to a ready-to-analyze table. There were enough variables to visualize to make drawing insights visually appealing. Various Pivot tables were created to use them to insert charts and slicers for visualization on the dashboard sheet.

Row Labels	Sum of Sales
PM	24274253.38
AM	10217781.93
Grand Total	34492035.97

Row Labels	Sum of Sales
Macbook Pro Laptop	8037600
iPhone	4794300
ThinkPad Laptop	4129558.7
Google Phone	3313200
27in 4K Gaming Monitor	2435097.56
Grand Total	22716156

Row Labels	Sum of Sales
Qtr 4	11549773.42
Qtr 2	9121078.25
Qtr 3	6989803.77
Qtr 1	6831379.53
Grand Total	34492035.97

Row Labels	Sum of Sales
2019	34483365.7
2020	8670.29
Grand Total	34492036

Row Labels	Sum of Quantity Ordered
12 AM	4428
1 AM	2619
2 AM	1538
3 AM	928
4 AM	937
5 AM	1493
6 AM	2810
7 AM	4558
8 AM	7002
9 AM	3616
10 AM	12308
11 AM	14005
12 PM	14202
1 PM	13605
2 PM	12362
3 PM	11391
4 PM	11662
5 PM	12229
6 PM	13802
7 PM	14470
8 PM	13768
9 PM	12244
10 PM	9899
11 PM	7065
Grand Total	209079

Row Labels	Sum of Sales
Jan	1022256.73
Feb	2202022.42
Mar	2807100.38
Apr	3390670.24
May	3152606.75
Jun	2577802.25
Jul	2647775.76
Aug	2244467.88
Sep	2097590.13
Oct	3736726.88
Nov	3199603.2
Dec	4619443.34
Grand Total	34492036

Row Labels	Sum of Sales
San Francisco	8262203.91
Los Angeles	5452570.8
New York City	4664317.43
Boston	3661642.01
Atlanta	2795498.58
Dallas	2767915.4
Seattle	2747755.48
Portland	2320490.61
Austin	1819581.75
Grand Total	34492035.97

Row Labels	Sum of Sales
San Francisco	8262203.9
Los Angeles	5452570.8
New York City	4664317.43
Boston	3661642.01
Atlanta	2795498.58
Dallas	2767915.4
Seattle	2747755.48
Portland	2320490.61
Austin	1819581.75
Grand Total	34492035.97

Row Labels	Sum of Sales
Wired Headphones	53542.34
Vareebadd Phone	137600
USB-C Charging Cable	70433.3
ThinkPad Laptop	962990.37
Macbook Pro Laptop	1931200
Lightning Charging Cable	83077.15
LG Washing Machine	108000
LG Dyer	85800
iPhone	182700
Google Phone	814800
Flascreen TV	346200
Bose SoundSport Headphones	331666.63
Apple AirPods Headphones	553650
AAA Batteries (4-pack)	22143.32
AA Batteries (4-pack)	25712
34in Ultrawide Monitor	549465.54
27in FHD Monitor	272081.06
27in 4K Gaming Monitor	563305.4
20in Monitor	109990
Grand Total	5452570.8

Fig.1.2

5. Dashboard Design and Features

• Overview:

The dashboard was designed based on the pivoted tables. The purpose of the dashboard is to represent the data collected from ExpressMart on charts like pie chart, cluster chart and line chart. These charts make reading and

drawing insights from the dataset understandable and prediction more accurate. All slicers are being connected to the charts which allow one to navigate through the variables for specific values.

- **Describe Your Visualizations:**

The six (6) charts are diagrams which show the behavior of sales and quantity by each variable. Below is an overview of each visualization categorized in four (4) sections.

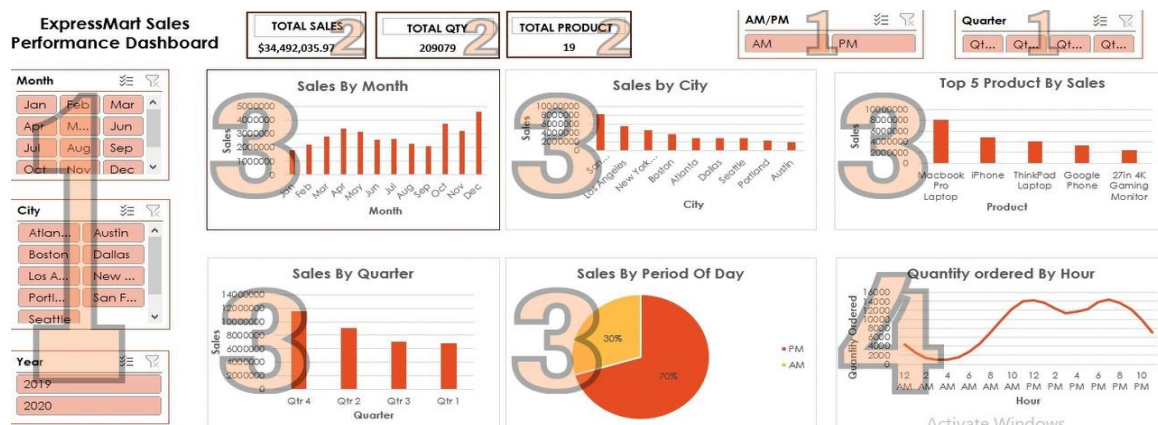


Fig.1.3

- **Section 1:** This section includes all the slicers which are used to switch buttons during presentation and analysis. Each slicer affects every chart and slicers on the dashboard since they are all linked together. Every button (on the slicer) activated on the dashboard filters the whole chart being linked to. This allows Data analysts to sort targeted variables to help them draw meaning from the charts.

- **Section 2:** This section shows the grand total of Sales, Quantity and Products. This guides analyst to have an idea of the total of everything in the Mart.
- **Section 3:** This section is about the behavior of sales by other variables. Sales By:

- Month: A Clustered Chart which represents the sales by month recording December as the highest sales month.

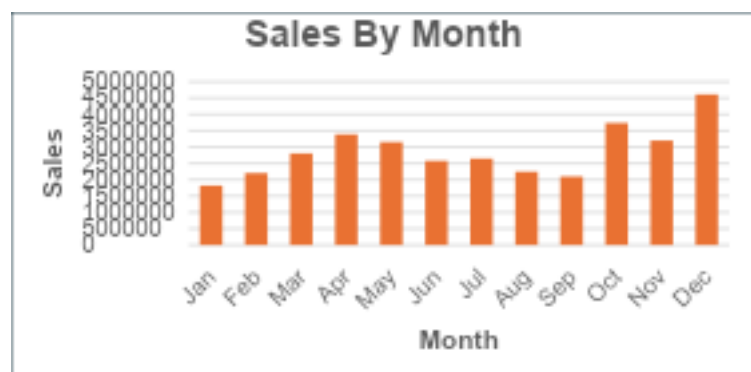


Fig.1.4

Quarter: A Clustered Chart which represents the sales by quarter with Qty 4 recording the highest sales.



Fig.1.5

City: A Clustered Chart which represents the sales recorded from each City with San Francisco generating the highest revenue for ExpressMart.



Fig.1.6

Period Of Day: A Pie Chart which represents the percentage of sales by AM and PM. The Mart records a rising sale from 5:00 AM in the morning with 12:00 PM recorded as it's first sales peak and 7:00 PM been it's second sales peak.

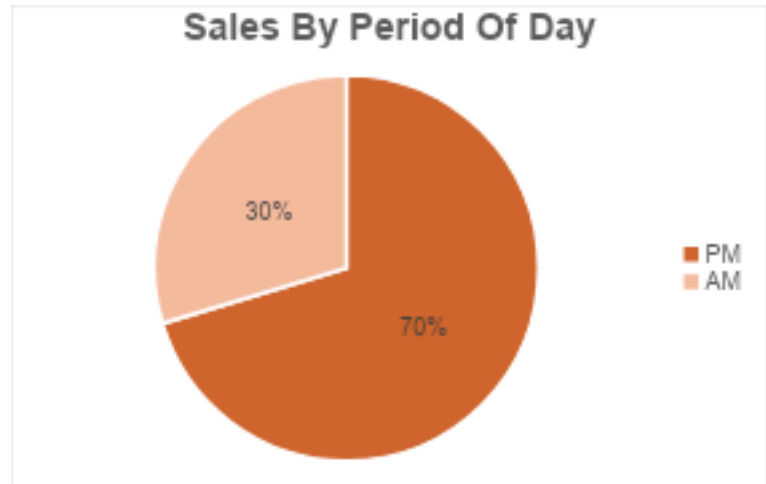


Fig.1.7

Top 5 Product: A Clustered Chart which represents the sales of the Top 5 products with Macbook Pro Laptop recording the highest sales.

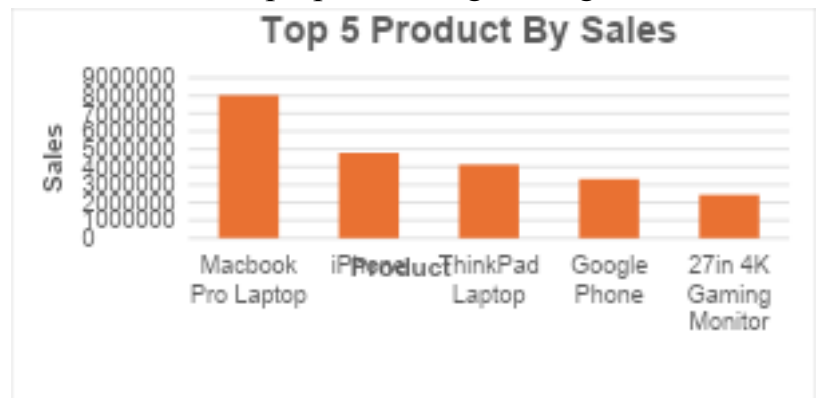


Fig.1.8

Section 4: Though section 4 is also a chart as section 3 shows, this particular chart represents Quantity Ordered By Hour, which makes its chart quite different from the others. This line Chart shows the precise hours of quantity of products being bought.

6. Key Insights

- **Analysis:**

Sales usually peak during the day, especially in the afternoon.

The Mart records a rising sale from 5:00 AM in the morning with 12:00 PM recorded as it's first sales peak and 7:00 PM been it's second sales peak. This implies that ExpressMart Should implore more staffs and have a better inventory to attend to customers during peak hours. This can also be done by allowing some of the staff to take lunch break before 12:00 PM to ensure that more staffs are available to during peak hours.

Sales usually peak in the fourth quarter (October, November, December) with December having the highest sales.

This analysis made by the quarters does not only show how customers demand products during the highest recording sales but implies that, these periods are preparation and celebration of the festive season. The same instance applies to April since Easter is celebrated at those periods.

The fall of sales in the subsequent month like January can also be drastic due to the end of the December festive season, those are the period every most of the customers get to work, foreigners traveling back to their various homes and may also be attributed to not restocking immediately product finishes during the festive season.

San Francisco having the highest sales can be because of it being a high-income earners City who can afford the Top 5 products which are quite

expensive and innovative than the others. MacBook Laptop being sold massively which generates high revenue for ExpressMart.

- **Trends:**

It can be observed that while the Top 5 Product by Sales generate more revenue to the Mart it also differs with quantity purchased since AAA Batteries (4-pack), AA Batteries (4-pack), USB-C Charging Cable, Lightning Charging Cable, Wired Headphones are also the Top 5 Product by quantity purchased.

- **Implications:.**

This analysis implies that staff must have lunch before 12:00 PM so that they will be available to attend to customers at peak hours.

Promotions can be made during low sales periods like the first and third quarters in order to increase sales and clear product stock up for the other periods. By merging the sales of products, adding a low demand product and a high demand product at a discount will not only increase sales but also help clear up the low purchased product for restock.

An observation can be made from the Top 5 Cities with the highest sales with each city showing it's Top 5 most purchased product sorted

according to its average sales over the years.

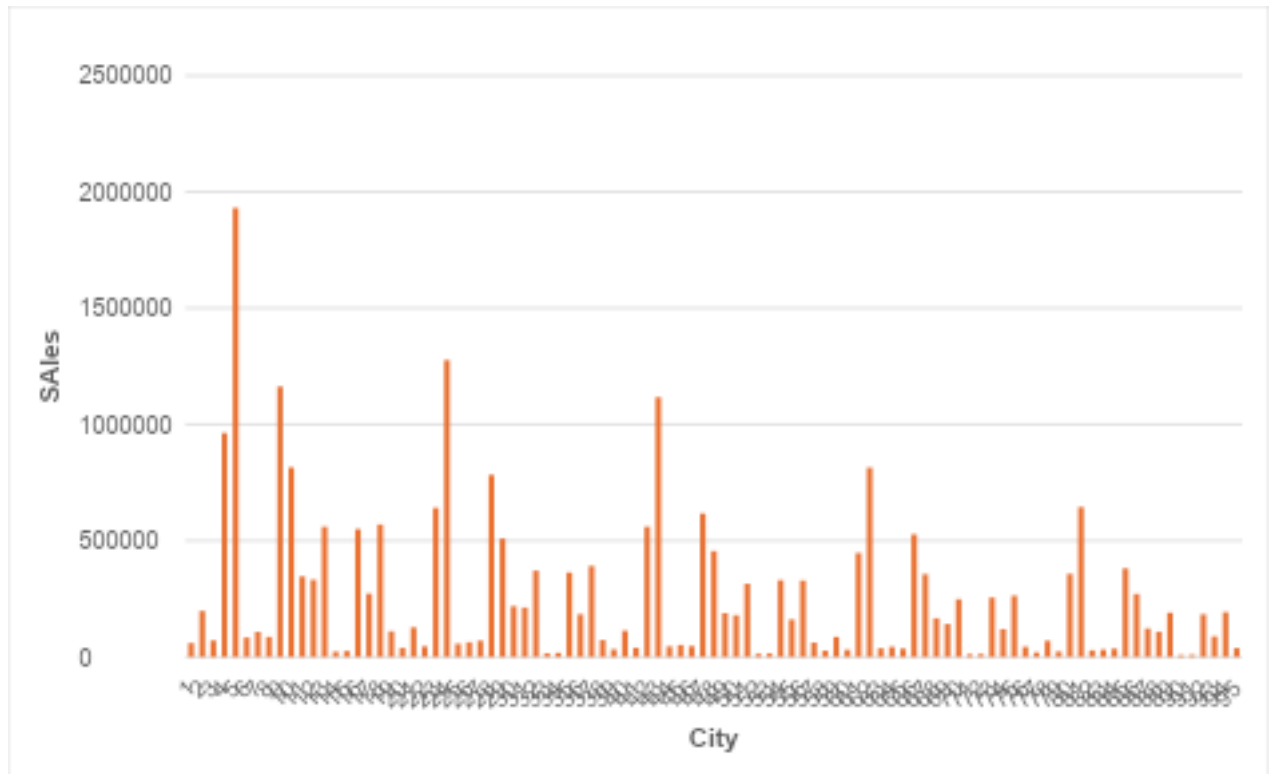


Fig.1.9

7. Recommendations

- **Strategies:**

Based on the above, ExpressMart can use these strategies to increase their sales in the subsequent years by:

- I. Stocking the right product at the right time and the right period to prevent customer from moving to a different Mart for their product.
- II. Offering discount seasonally, especially during low sales period by adding highly purchased product with a low one with discounted price to help sales of the low sales products.
- III. Rendering good customer service to customers to enhance customer satisfaction.

- **Improvements:**

ExpressMart can add a cost column in order to help analysts compute the profits or losses made by the mart to help accurate prediction and better decision.

8. Conclusion

- **Summary:**

The project aims to analyze ExpressMart's sales data to enhance understanding of customer behavior and improve decision-making and operational efficiency.

The dashboard features five dynamic slicers for data visualization and six diagrams showcasing sales trends by various categories, along with total metrics for sales, quantity, and products.

The data was sourced from ExpressMart (2019-2020) and underwent a thorough cleaning process to standardize formats and ensure accuracy, resulting in a complete dataset.

Key insights reveal peak sales in the afternoon and fourth quarter, with San Francisco leading in sales; notable differences exist between top revenue-generating and quantity-sold products.

Recommendations include adjusting staffing during peak hours, implementing seasonal promotions to boost sales, enhancing customer service, and adding a cost column for better profit analysis.

The dashboard serves as a powerful visual tool for stakeholders to explore sales dynamics, facilitating data-driven strategies for operational improvements and increased revenue.

- **Future Work:** Suggest areas for further analysis or enhancements to the dashboard. ExpressMart can focus on asking customers for feedback on both products and customer service in order to help data analysts and stakeholders, which helps in making a good decision.



Fig.2.0