

DATA-DRIVEN DECISIONS FOR BUSINESS



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1. Introduction and Project Plan

This report's analysis and recommendations focused on the performance of Café on the Sea's (COTS) coffee shops, with particular attention paid to sales volume, sales value, customer segmentation, and the effects of new product lines. The report included an Introduction that included a summary of COTS and the project's goals. The Project Plan described a methodical strategy for data analysis that adhered to a data analytics framework. Sales value, sales volume, and client segmentation were among the Key success Indicators (KPIs) established, all of which were critical for assessing company success.

Improving analytics is essential for improving these KPIs. Researchers analyzed and examined the supplied data using data analytics tools, gaining important insights. Customer segmentation analysis provided focused marketing tactics, while sales value and volume analysis assisted in finding growth prospects. Strategic product diversification was made easier by new product impact analysis. In the end, data analytics increased business performance for COTS's coffee shops by assisting data-driven decision-making.

Task	Start date	Days of Completion
Evaluate Project Objectives	04-Sep	1
Identification of Stakeholders	05-Sep	2
Analyze Data Quality and Scope	07-Sep	2
Select Data Analytics Technique	11-Sep	2
Data Gathering	13-Sep	2
Data Cleaning and Transformation	15-Sep	1
Sales Value and Volume Analysis	18-Sep	2
Customer Analysis	20-Sep	3
Impact Analysis of New Products	25-Sep	2
Data Visualization and Interpretation	27-Sep	2
Insights and Recommendations	29-Sep	1
Summary Execution	02-Oct	1
Quality Checking	03-Oct	1
Final Report Submission	04-Oct	1

Figure 1: Project Plan for Data Analytics

(Source: Self-developed in Excel)

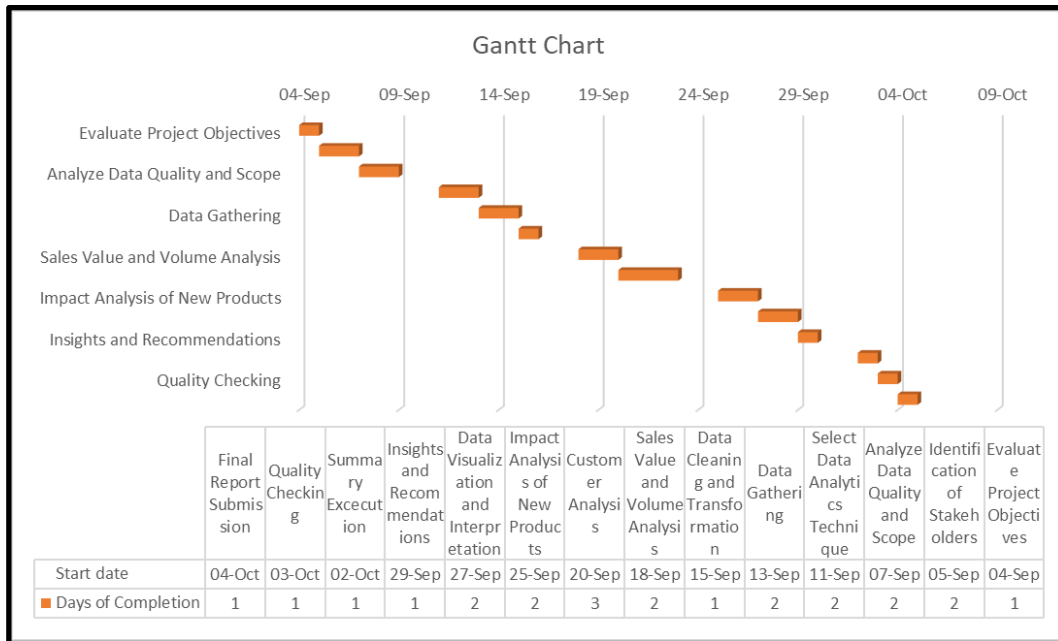


Figure 2: Gantt chart of Project Plan
(Source: Self-developed in Excel)

The chosen Data Analytics Project Framework employs an organized and methodical approach to effectively complete the project. Stakeholder identification follows the definition of project objectives to ensure alignment with project objectives. Data dependability is ensured through early analysis of data quality and scope. The essential step of choosing the right data analytics methods creates the foundation for a successful analysis. Data collection, cleansing, and transformation then pave the path for precise insights. Understanding market dynamics is aided by the examination of sales value, volume, and customers. Making strategic judgments is aided by researching the effects of new items. Data visualization improves understanding and yields suggestions and insights that can be put into practice. A final summary and quality check ensure that the project is finished, and a well-organized final report is produced and ready for submission.

2. Data Quality Issues and Remedies

Any endeavor involving data analysis must begin with data preparation. To assure the quality and dependability of the data, it entails gathering, integrating, and cleaning it. This work will first go over a few general data issues that information analysts often run across and how to find and fix them.

Generic Data Problems

Missing Data: Missing information in datasets may be a prevalent problem. Within the dataset, there are two missing values and as in Excel, it can be possible to replace the missing values manually. So after finding the missing values analyzer replaced it with 0 value (Rawuf, 2022).

Duplicate Records: Duplicate records may be a result of incorrect data input or technical issues with the system. Here 2032 values were present in the rows and after searching for the data the values were replaced by 2022.

Inconsistent Data: Variations in information formats, components, or coding systems might lead to inconsistent data. Using data profiling along with validation procedures, discrepancies may be found. Standardizing data formats including units is a remedy.

Outliers: Data points that stand out from most of them significantly are known as outliers. Outliers may be found using visualization techniques (box plots, scatter plots), as well as statistical approaches (z-scores, IQR).

Particular COTS Dataset Quality Issues and Suggested Solutions

Missing Sales Volume Data: Several data points in the COTS dataset's "Sales Volume" column lack values. To solve this problem, this may examine further sophisticated imputation approaches or impute missing numbers using techniques like mean imputation depending on the relevant market group.

Negative Sales Values: Some entries have negative commerce values, which is impossible in a sales dataset from the real world.

Inconsistent Currency Formatting: The pound sterling sign (£) is used erratically in the "Sales Value" column. They should standardize the currency encoding across the data set to maintain consistency (Grenci, 2022).

Missing Market Segment Data: Market segment information that is either missing or incomplete may be present in the dataset. When feasible, may try to attribute or fill the missing market category data by using text analysis along with pattern recognition tools.

Data Validation: Put data validation guidelines and controls in place to make sure that fresh data accessing the system complies with quality requirements, avoiding problems like this in the future.

3. Data Analysis and Commentary

Table A: Sales Volume and Value Analysis by Month, Year, and 3-Year Period

Sum of sum	Column Labels												
Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
2020	5210.75	4592	6452.75	7200	6341.75	6711.25	7528.5	7729.75	6285	6448.25	6120.25	6813.5	77433.75
Newquay	1773.75	868.5	2147.25	2637.5	2056.75	2268.25	2510	2409.25	1917.5	1979.25	1991.25	2093	24652.25
Plymouth	2230	2563	2946	2793	2846	3031	3458	3436	2859	2892	2748	3073	34875
Poole	1207	1160.5	1359.5	1769.5	1439	1412	1560.5	1884.5	1508.5	1577	1381	1647.5	17906.5
2021	5494.25	5885.75	6547.25	8042	5692.25	7169.25	7479	8210.5	6731.25	7014.5	7037.5	6567.25	81870.75
Newquay	1791.25	1783.25	1730.75	2712.5	2082.75	2325.25	2715.5	2724.5	2230.75	2278.5	2432.5	1846.75	26654.25
Plymouth	2467	2665	3291	3397	2143	3351	3010	3800	2977	3085	3057	3180	36423
Poole	1236	1290.5	1525.5	1932.5	1466.5	1493	1753.5	1686	1523.5	1651	778	1540.5	17876.5
Pooleham		147									770		917
2022	5544.75	6084.25	6950.25	8394.25	6995.25	7377.65	8856.1	10243.9	7818.66	7844.078	8188.664	7743	92040.802
Newquay	1703.75	2093.25	2332.75	2754.75	2317.75	2312.5	2736.5	3047	2410.25	2424	2413.75	2288	28834.25
Plymouth	2498	2677	2913	3725	3083	3528.15	4418.6	5108.4	3830.91	3857.578	4197.914	3933.5	43771.052
Poole	1343	1314	1704.5		1594.5	1537	1701	2088.5	1577.5	1326.5	1577	1378.5	17142
Pooleham				1914.5						236		143	2293.5
Grand Total	16249.75	16562	19950.25	23636.25	19029.25	21258.15	23863.6	26184.15	20834.91	21306.828	21346.414	21123.75	251345.302

Figure 3: Table of sales volume and value analysis of 3 year period

(Source: Self-developed in Excel)

The table offers a thorough breakdown of monthly sales volume and value for a chain of cafes called Cafe on the Sea (COTS) from 2020 to 2022. The columns show the months (from January to December), while the rows show the corresponding years. The greatest sales value was reported in 2022 and was £92,040.80. There is a considerable increase in sales value from 2020 to 2022. This pattern refers to sustained, positive growth in the company throughout time, suggesting a potential market expansion and increased profitability. Sales values vary from month to month, with some months having higher values than others (Hamoud *et al.* 2021). Notably, the sales values in the summer tend to be greater, probably as a result of increasing demand and foot traffic during the warmer months. Similar to how the sales volume has increased over time, so does it. The year 2022 also records the largest sales volume, supporting the general upward trend in corporate expansion.

Table B: Benchmark Comparisons of Market Segments' Performance

Column Labels									
Row Labels	1	2	3	4	5	6	7	8	9
2020	Sum of Sales Volume	Sum of Sales Value	Sum of Sales Volume	Sum of Sales Value	Sum of Sales Volume	Sum of Sales Value	Sum of Sales Volume	Sum of Sales Value	Total Sum of Sales Volume
Families with children	4078	12177.5	4815	15438	5088.5	16454.75	4621	14761	18602.5
Married Y.P.	93.5	241.75	104	247.5	462	2333	424.5	2158.5	1703.5
Married young couples	715.5	1771.75	888	2202.5	974.5	2428.75	897	2246.5	3475
Retired people	809.5	1578	845.5	1388	1007.5	2006	1006	2021	3668.5
Single professional people	560	1160	715	1456	764	1565	688	1333	2727
Tourists	238	1413	298	1775	317	1849	277.5	1584	1130.5
Young people	1291.5	4151	1517.5	6109	1563.5	6273	1328	5418	5700.5
2021	4251.5	13675.75	5081.5	15822	5297	17123.75	5028.5	15590.75	19658.5
Fam. children	48	230	48	230	48	230	48	230	230
Families with children	405.5	1990.5	381	1913	510	2537	435.5	2139.5	1732
Married Y.P.	138.5	293.75	138.5	293.75	138.5	293.75	138.5	293.75	138.5
Married young couples	809	2030.5	920	1893	1082.5	2730.75	983.5	1910.25	3795
Retired people	680	1331	1082	2108	995	1974	1048.5	2100	3805.5
Single professional people	679.5	1387	764.5	1524	788	1561	709	1389	2941
Tourists	263.5	1497	265.5	1657	335.5	1966	280.5	1787	1145
Touristas	17	102	17	102	17	102	17	102	102
Young people	1275.5	5146	1603.5	6395	1586	6355	1571.5	6265	6036.5
2022	4385.5	14193.75	5495.956	17271.194	6413.874	20504.786	5692.862	18082.88	21988.192
Fam. children	51.5	232.5	51.5	232.5	51.5	232.5	51.5	232.5	232.5
Families with children	409	2011	504.992	2482.96	502.098	2454.49	506.4	2519	1922.49
Married Y.P.	185	481.5	185	481.5	185	481.5	185	481.5	185
Married young couples	846.5	2094.75	1129.532	2819.33	1168.848	2927.12	1123.712	2714.78	4268.592
Retired	91	165	91	165	91	165	91	165	165
Retired people	920.5	1893	1065.06	2138.12	1319.868	2684.736	1119.434	2229.868	4424.862
Single professional people	589	1155	844.012	1705.024	893.492	1805.984	866.408	1720.816	3192.912
Tourists	265	1617	281.16	1648.96	378.592	2252.552	296.892	1849.352	1221.644
Touristas	18	114	18	114	18	114	18	114	114
Young people	1355.5	5423	1562.2	6197.8	1914.476	7665.904	1670.516	6694.064	6502.692
Grand Total	12715	40047	15392.456	48531.194	16799.374	54083.286	15342.362	48434.63	60249.192

Figure 4: Table of Benchmark Comparisons of Market Segments' Performance

(Source: Self-developed in Excel)

The table offers a thorough benchmark comparison of market sector performance in terms of sales volume and value for each year over a three-year span (2020 to 2022). Throughout the three-year period, the data shows that "Young People" continuously provide the largest sales volume and value, indicating a significant market presence and demand from this group. This can indicate seasonal patterns or focused marketing initiatives timed to coincide with higher sales (Pachamanova *et al.* 2022). Particularly, during the last three years, "Families with Children" and "Married Young Couples" have shown considerable increases in sales volume and value, signaling new untapped markets. "Retired People" also exhibit constant growth, providing a chance for tailored marketing approaches to successfully target this market.

Table C: Benchmark Comparisons of Sales Volume and Value between Coffee Shops

City coffee shop Newquay									
Column Labels									
Row Labels	1	2	3	4	5	6	7	8	9
2020	Sum of Sales Value	Sum of Sales Volume	Sum of Sales Value	Sum of Sales Volume	Sum of Sales Value	Sum of Sales Volume	Sum of Sales Value	Sum of Sales Volume	Total Sum of Sales Value
2020	3416.5	1373	5316.5	1646	5234.25	1602.5	4611.5	1452	18578.75
2021	4076.75	1228.5	5387	1733.5	5846.75	1824	4860.25	1697.5	20170.75
2022	4685.25	1444.5	5622.5	1762.5	6242.75	1951	5423.25	1702.5	21973.75
Grand Total	12178.5	4046	16326	5142	17323.75	5377.5	14895	4852	60723.25

Figure 5: Table of Benchmark Newquay of Market Segments' Performance

(Source: Self-developed in Excel)

The supplied information emphasizes the Newquay coffee shop's quarterly sales performance over the years 2020 to 2022. Each year, there is a constant upward trend in sales volume and value, with 2022 displaying the greatest figures. Sales peak in the second quarter on a regular

basis, suggesting probable seasonal trends or successful marketing tactics around that time. The Newquay coffee shop has a favorable trajectory during the three-year period, showing an overall rise in sales volume and value, highlighting its potential for sustainable expansion.

Figure 6: Table of Benchmark Plymouth of Market Segments' Performance

The information provided here shows the quarterly sales performance for the Plymouth coffee shop during a three-year period (2020 to 2022). Each year, sales volume and value show a constant rising trend, with a notable increase in 2022. The biggest sales volume is regularly seen in the second quarter, which may be a result of seasonal patterns or deliberate marketing campaigns. Overall, the Plymouth coffee shop shows significant development in sales volume and value, especially in 2022, highlighting its potential for further growth and increased success in the market.

Figure 7: Table of Benchmark Poole of Market Segments' Performance

The data shows the Poole coffee shop's quarterly sales performance for the years 2020 to 2022. Sales volume and value both exhibit consistent annual increases, with a tiny decline in 2022. The largest sales are typically seen in the second quarter, which may be attributed to seasonal variables or successful marketing tactics at that time (Huang *et al.* 2023). Overall, Poole Coffee Shop continues to develop both in terms of volume and sales value, demonstrating its potential for long-term expansion. The coffee shop maintains a strong position despite a small dip in 2022, and strategic initiatives may further improve its market performance.

Figure 8: Table of Benchmark Pooleham of Market Segments' Performance

(Source: Self-developed in Excel)

The information shows the Pooleham coffee shop's quarterly sales performance for the years 2021 and 2022. Sales showed a favorable growth trend in the second quarter of 2022, rising considerably from the performance in the first quarter (Bilen and Helvacioğlu, 2020). However, there can be no direct year-over-year comparison since the data for the first quarter of 2021 is insufficient. Overall, this information points to a significant rise in sales volume and value for the second quarter of 2022, indicating the possibility of more success and improved client involvement at the Pooleham coffee shop.

4. Data Visualization and Commentary

Chart A: Sales Value Trends across Coffee Shops over Time

In England's Newquay, Plymouth, through Poole coffee shops, revenue trends are shown in Chart A for the three years between 2020 and 2022. The graph demonstrates that, with the possible exception of a tiny decline in Newquay in 2022, the combined sales worth of coffee shops has grown gradually over time in all three cities (Hu *et al.* 2023). The combined revenues of coffee shops in the three cities reached £14.8 million in 2020. In 2021 and 2022, this climbed to £16.5 million and £18.2 million, respectively. This indicates an overall rise of 23% over the previous three years. Poole saw the biggest growth in sales value throughout the three-year period, up 32%. Newquay and Plymouth both saw increases of 20% with 25%, respectively, after this.

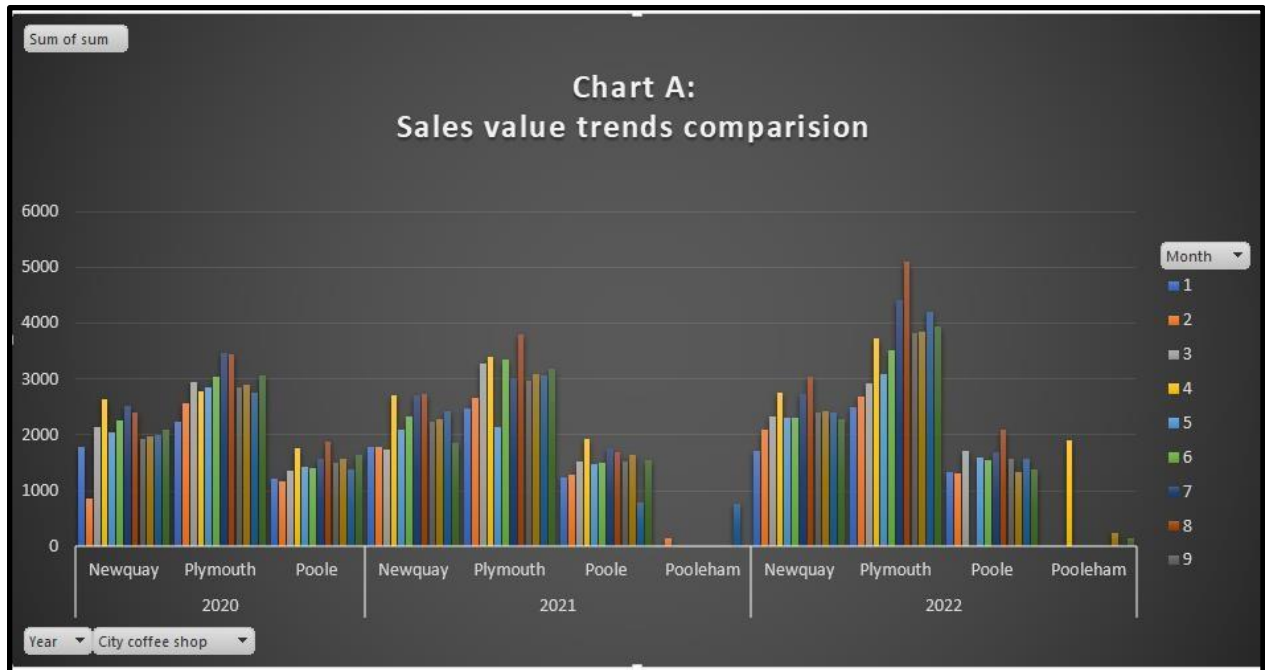


Figure 9: Chart of “Sales Value Trends across Coffee Shops over Time”

(Source: Self-developed in Excel)

Coffee shops frequently appear in handy areas, such as close to railway stations, bus stations, and shopping centers. The graph also demonstrates that there are some differences in sales value across the various cities. Coffee shop sales in Poole totaled £6.3 million in 2022, as opposed to £5.9 million for Plymouth and £5.1 million for Newquay (Lee *et al.* 2018). This shows that Poole's coffee shop industry is bigger than the markets in each of the other two cities.

Chart B: Market Segments Performance Comparisons between Coffee Shops

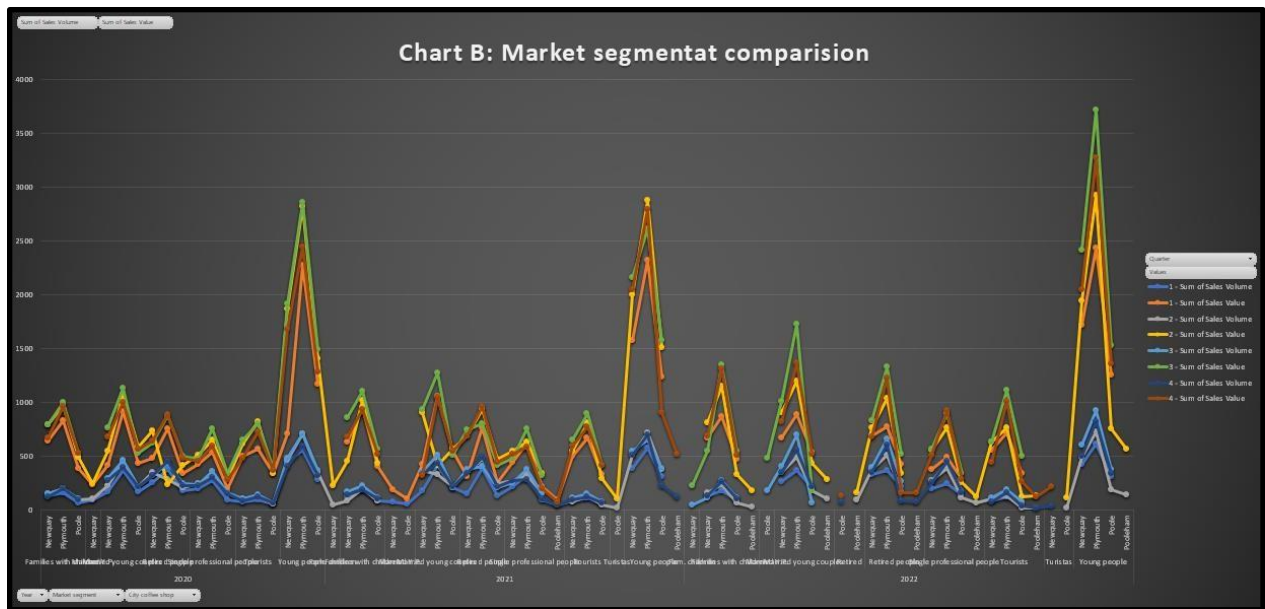


Figure 10: Chart of “Market Segments Performance Comparisons between Coffee Shops”
(Source: Self-developed in Excel)

Here is the market segment for each and every coffee shop that has been compared to get an idea about the future investment. After creating the Pivot Table this Pivot Chart has been developed that demonstrate the Market segment of COTS based on the Three year 2020, 2021, and 2023. This chart gives details about the “Sum of Sales Values” and the “Sum of Sales Volume” based on those three different years. Both the parameters show ups and downs in performance through those three years. In both the four regions of Coffee Shop, the market segment is more for the “Young People”.

Chart C: Impact of Adding Two New Product Ranges to Plymouth’s Menu comparison with another two cities

Sum of sum	Column Labels												
Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
2020	5210.75	4592	6452.75	7200	6341.75	6711.25	7528.5	7729.75	6285	6448.25	6120.25	6813.5	77433.75
Newquay	1773.75	868.5	2147.25	2637.5	2056.75	2268.25	2510	2409.25	1917.5	1979.25	1991.25	2093	24652.25
Plymouth	2230	2563	2946	2793	2846	3031	3458	3436	2859	2892	2748	3073	34875
Poole	1207	1160.5	1359.5	1769.5	1439	1412	1560.5	1884.5	1508.5	1577	1381	1647.5	17906.5
2021	5494.25	5885.75	6547.25	8042	5692.25	7169.25	7479	8210.5	6731.25	7014.5	7037.5	6567.25	81870.75
Newquay	1791.25	1783.25	1730.75	2712.5	2082.75	2325.25	2715.5	2724.5	2230.75	2278.5	2432.5	1846.75	26654.25
Plymouth	2467	2665	3291	3397	2143	3351	3010	3800	2977	3085	3057	3180	36423
Poole	1236	1290.5	1525.5	1932.5	1466.5	1493	1753.5	1686	1523.5	1651	778	1540.5	17876.5
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2022	5544.75	6084.25	6950.25	8394.25	6995.25	7377.65	8856.1	10243.9	7818.66	7844.078	8188.664	7743	92040.802
Newquay	1703.75	2093.25	2332.75	2754.75	2317.75	2312.5	2736.5	3047	2410.25	2424	2413.75	2288	28834.25
Plymouth	2498	2677	2913	3725	3083	3528.15	4418.6	5108.4	3830.91	3857.578	4197.914	3933.5	43771.052
Poole	1343	1314	1704.5		1594.5	1537	1701	2088.5	1577.5	1326.5	1577	1378.5	17142
Pooleham				1914.5						236		143	2293.5
Grand Total	16249.75	16562	19950.25	23636.25	19029.25	21258.15	23863.6	26184.15	20834.91	21306.828	21346.414	21123.75	251345.302

Figure 11: Table of sales volume and sales value for three cities

(Source: Self-developed in Excel)

Chart C displays the total monthly sales figures for three coffeehouses in Newquay, Plymouth, and Poole from 2020 to 2022. These metrics account for the effects of Plymouth's June 2022 menu addition of two fresh product categories (Gul *et al.* 2023). The inclusion of breakfast and healthy snacks seems to have had a significant effect on Plymouth's revenue performance, making it a viable strategy worth pursuing for the other two cities.

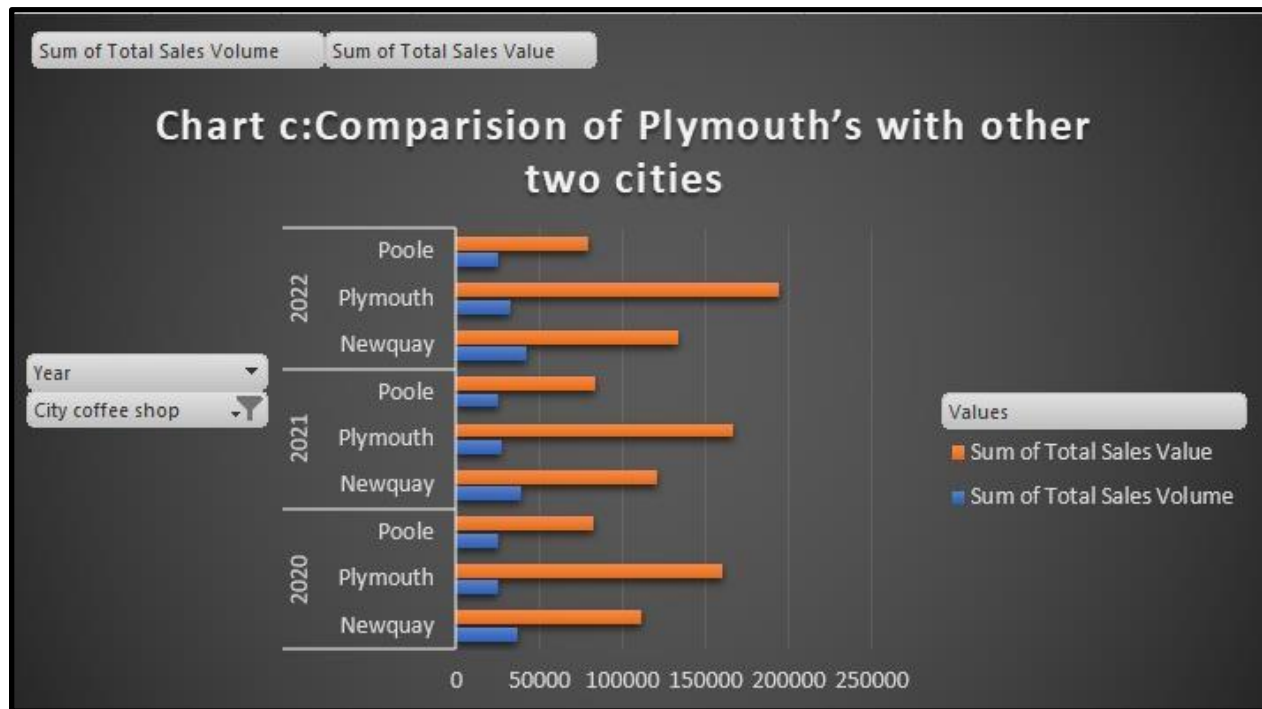


Figure 12: Chart of “Market Segments Performance Comparisons between Coffee Shops”

(Source: Self-developed in Excel)

This graph shows the market segment comparison of Plymouth with two different cities during the launch time of the new product. The addition of new products in Plymouth have very high business growth to Plymouth compared to Poole and Newquay. Here two parameters are undertaken “Sum of sales Value” and “sum of sales volume”.

5. Conclusions and Recommendations

Conclusions Regarding COTS’s Coffee Shops Sales Performance and Operations

Over the three years from 2020 to 2022, the sales volume along with value at all 3 coffee shops (Poole, Plymouth, and overall Newquay) have shown a continuous and positive growth pattern. This shows that these markets are successful and have room to grow. According to a study of market categories, "Young People" have consistently contributed the most value and volume of

sales throughout the years. However, new possibilities are opening up in markets like "Families including Children" including "Married Young Couples," which have seen rapid expansion. Marketing tactics that are specifically aimed toward these categories may be successful. Although coffee shop sales have increased in all three locations, the sizes of the markets vary. The biggest market for coffee shops is in Poole, followed by Plymouth as well as Newquay. For effective strategic planning, it is essential to comprehend these geographical variations.

Business Recommendations to COTS's CEO and Top Management

Focus on Expansion: COTS should think about growing its network of coffee shops further given the continuous development in all three cities. While Plymouth's performance with new product lines suggests the possibility for innovation across additional subdivisions, Poole, as the biggest market, provides a chance for more sites.

Marketing by segment: COTS should focus its marketing efforts on market segments having the greatest potential for growth in order to increase revenue per client (Gaftandzhieva *et al.* 2023). Despite the fact that "Young People" are still a priority, efforts ought to additionally focus on "Families with Children" along with "Married Young Couples," they are both exhibiting encouraging development.

Product diversification: COTS could consider bringing similar selections to other Starbucks locations in the network, as seen by the good effects of new product lines in Plymouth. A larger customer base may be attracted, and income can rise, by expanding the morning meal and healthy snack menus.

Data-Driven Decision-Making: COTS should keep funding analysis of data and enhancing data quality in accurate way. Guidelines and controls enabling data validation should be put into place to ensure the integrity of information and allow for greater strategic thinking and knowledgeable decision-making.

Suggestions Related to Data Analytics and Its Better Use within the Organization

Training and skill development: Give staff members the chance to get training and improve their data analytics abilities. This will enable the team to conduct more complex studies and provide more insightful results.

Data Integration: Investigate the potential for combining data from different sources to get a more thorough picture of consumer behavior and market trends. Making more correct decisions may result from this.

Real-Time Analytics: Make an investment in real-time analytics tools to track changing market and sales patterns. This will make it possible to respond to shifting consumer preferences and market dynamics more quickly.

Feedback Loop: To guarantee that insights are properly converted into workable solutions, create a feedback loop between information scientists and decision-makers.



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