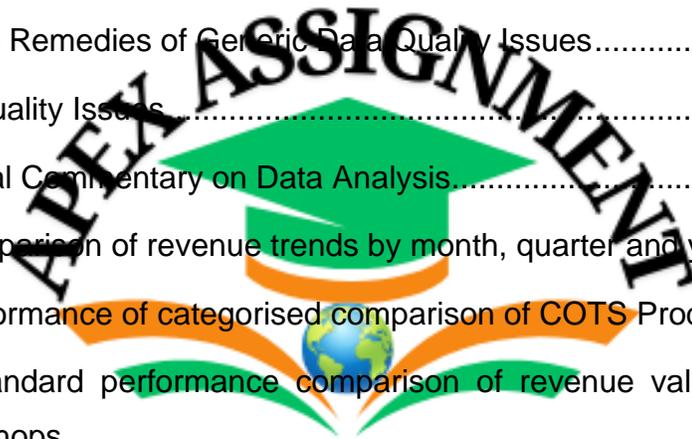


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Task One: Project Plan and Introduction of Data-Driven Study

1.1 Introduction

The following study has been mentioned to analyse the key research of Café on the Sea's (COTS) data-driven analytics. This will inform that the financial significance of COTS data analysis might be formulated to assess their financial constitutions. However, the 15 cities are mainly common during COTS analysis, which is addressed to include Bournemouth, Brighton, Southampton, Portsmouth, Blackpool and St Ives. The financial condition of a corporation may be effectively developed with the help of data analysts. Issues with data quality are prevalent in all businesses. Data analysts identify the problems with the quality of the information and offer solutions for fixing them. Here, pay attention to the COTS data set's data integrity problems and choose a remedy. In addition, emphasise the essential COTS indicators of success here. Every business has to have this matrix. Additionally, the sales volume and value of this café are based on the visual representation below. There are a few types of different data appear, which are discussed towards the company's portable coffee shops. Focusing on the business's goals after that. The report's last part analyses the data collection method and offers ideas for improving the coffee shop's non-monetary and financial situation.

1.2 Key Performance Indicators of COTS (KPIs)

Businesses' financial and non-monetary situation is determined by key performance indicators, which are critical measurements. These involve revenue efficiencies, financial standing, and customer earnings. KPIs aid businesses in the creation of objectives and deadlines, the assessment of their efficacy, and the making of defensible choices (Li, *et.al*, 2023). They pinpoint advantages and disadvantages, promote accountability, and stoke employee zeal. KPIs aid in the earlier trend identification that enables prompt plan modifications. A company's KPIs act as a compass, assuring that it stays on course, adapts to changing conditions, and continually pursues improvement, eventually enhancing its efficiency and competition.

Here, below, the KPIs of COTS have been discussed:

- Monitor a yearly increase in sales to assess the business's performance as a whole and demand from the market.
- Performance of all of the different categories of products such as cakes, coffee, cold drinks, hot drinks, and sandwiches, can help customers identify which ones are the best performing.
- Monthly revenue trend Examine sales information from the years 2020, 2021, 2022, and 2032 to discover seasonality in consumer behaviour.
- Analysis of seasonal variations in merchandise sales (coffee sales increased significantly in 2021) will help you determine whether the advertising and inventory strategies need to be adjusted.
- Product sales increase Find the products with the highest rates of increase in sales and allocate resources to them.
- The entire amount of sales has followed to maintain tabs on the business as a whole and its revenue goals.

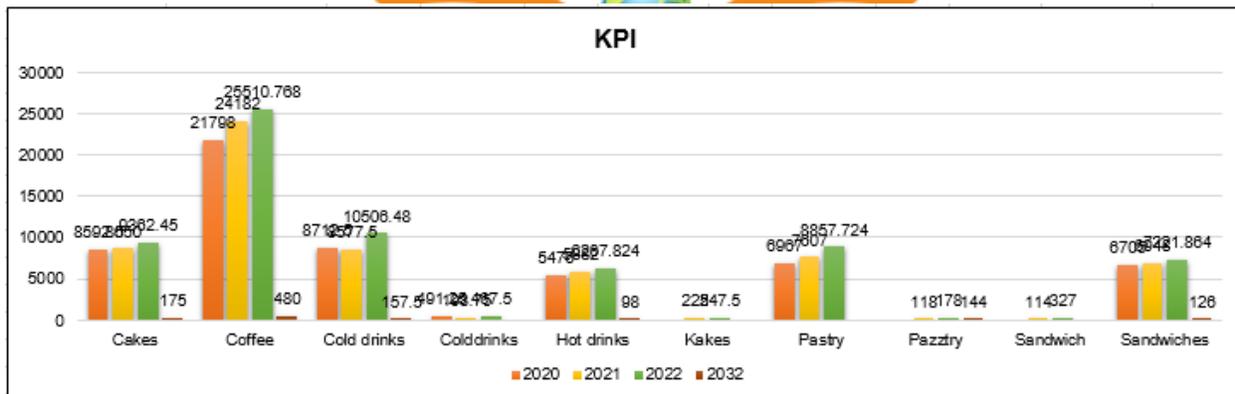


Figure 1: Key Performance Indicator of COTS

(Source: As per given dataset)

Task Two: Generative Analysis of Data Quality Issues

2.1 Addressing the Generic Data Quality Issues

- **Inaccurate Data:** Accuracy issues in business information sets are frequently brought on by errors in data input and processing. Therefore, it's important to handle the business's final report effectively to prevent issues with quality (Ghahramani, *et.al*, 2020).

- **Misleading Data:** Lack of data sources or missing numbers might lead to an unequal or insufficient assessment since the assets and liabilities associated with the data collection are different (Wu, *et.al*, 2021).
- **Double-entry Information:** By evaluating and putting the financial information that has separately improved to define the kind of validations.

2.2 Options for the Remedies of Generic Data Quality Issues

- **Incomplete Information Discussion:** Errors can be found by comparing data, doing unusual research, using validation criteria, applying autonomous quality assurance procedures, and carefully cleaning the data (Teh, Kempa-Liehr and Wang, 2020).
- **Lack of Missing Information:** Statistical techniques including correlation & heat maps may be used to find missing data trends. Complex methods involving referring to imputation or k-nearest peers can be used to impute missing variables.
- **Defining the Duplicate Data:** By evaluating data based on qualities and applying hashing or clustering techniques, it is able to identify duplicates, remove superfluous items, and ensure the accuracy of information using predefined criteria (Anastassopoulou, *et.al*, 2020).

2.3 COTS Data Quality Issues

City coffee	Year	Month	Product cate	Sales Volume	Sales Value
Southampton	2020		2 Hot drinks	-	£0
Portsmouth	2021		3 Pastry	-	£0
Blackpool	2020		4 Pastry	-1	-£344
Blackpool	2021		5 Cold drinks	-1	-£385

Table 1: Data Quality Issues of COTS

(Source: As per given dataset)

For 2020 or 2021, there isn't any sales data accessible for coffee shops in Southampton and Portsmouth. A decrease in sales volume was also seen in Blackpool in 2020 and 2021. In terms of sales, Blackpool had -344 and -385 over the year. A revenue figure that is negative wouldn't be possible for the businesses mentioned above.

City coffee	Year	Month	Product cate	Sales Volume	Sales Value
Southampton	2020	2	Hot drinks	-	£0
Portsmouth	2020	2	Coffee	135	-£540
Portsmouth	2021	3	Pastry	-	£0
Portsmouth	2021	12	Cold drinks	107	-£266
Blackpool	2020	4	Pastry	-1	-£344
Blackpool	2021	5	Cold drinks	-1	-£385

Table 2: Data Quality Issues of COTS

(Source: As per given dataset)

Additionally, the data quality of the COTS collection has problems with low sales numbers and values. On the trading of 135 coffees in 2020, Portsmouth generated a total income of -540.00. A negative selling price is challenging to achieve with several transactions. Portsmouth accomplished negative revenue and increased sales volume in both 2020 and 2021, in addition to 2020. According to these companies, 107 cold beverage cases worth 266 had been sold in that year.

Task Three: Financial Commentary on Data Analysis

3.1 (Table A) Comparison of revenue trends by month, quarter and year.

- There are different types of data represented to communicate their financing importance within the particular three years 2020, 2021 and 2022.
- The total sales in 2020, it was described to assess their financial importance. Then, the sales in 2020 were discussed as 26564 in Blackpool, 48483 in Portsmouth, and 13694 in Southampton. Here, the overall sales is 58742.
- In 2021, the sales are represented as 27831 in Blackpool, 20298 in Portsmouth, 684 in Southam, and 13688 in Southampton. Then, the overall sales are estimated at 62502.
- In 2022, the sales are estimated as 33385 in Blackpool, 21876 in Portsmouth, 1609 in Southam, and 12095 in Southampton. Therefore, the total sales is described as 68967.

Table A: Sales volume and value by month, year and across the 3 years period					
Sum of Sales Value	Column Labels				
Row Labels	Blackpool	Portsmouth	Southam	Southampton	Grand Total
2020	26564	18483.75		13694.5	58742.25
2021	27831	20298.75	684	13688.5	62502.25
2022	33385.36	21876.75	1609.5	12095.5	68967.11
2032			126	1054.5	1180.5
Grand Total	87780.36	60659.25	2419.5	40533	191392.11

Table 3: Sales volume and value by month, year and across the 3-year period

(Source: As per given dataset)

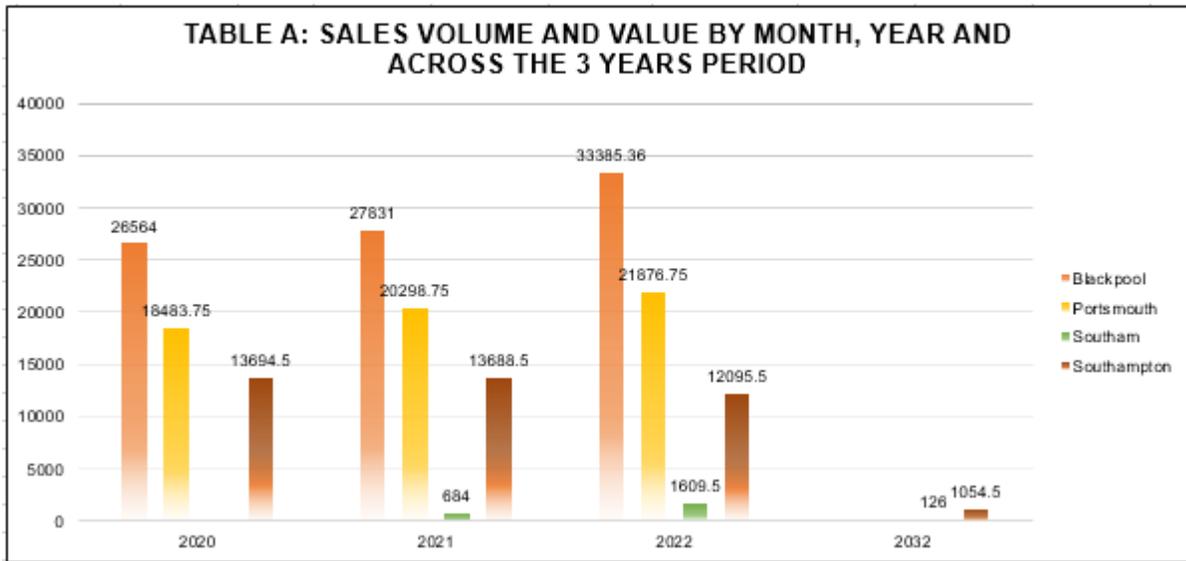


Figure 2: Comparison of Sales Value Trend Analysis

(Source: As per given dataset)

3.2 (Table B) Performance of categorised comparison of COTS Products

- This analysis section has been grouped by performing the financial importance of sales increments depending on their financial importance.
- Cake sales continue to be strong, while coffee sales have experienced an amazing rise.
- As hot drinks including coffee constantly rise in value and quantity, cold drinks display a more unpredictable tendency.
- Sandwich revenues continually increase, notably in terms of volume, while sales of pastries remain mostly stable.

- These benchmarking evaluations show performance differences between groups of products, highlighting opportunities for directional budgeting and allocation of resources.

(Table B) Benchmark comparisons of product groups performance covering sales volume and value by quarter, by year and across the 3 years period

Sum of Sales Value	Column Labels												2020 Total
Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	
Cakes	570	647.5	662.5	802.5	677.5	750	855	900	620	675	692.5	740	8592.5
Coffee	1634	600	1840	2448	1824	1830	2274	2094	1902	1906	1584	1862	21798
Cold drinks	571.25	690	542.5	597.5	826.25	808.75	812.5	891.25	715	726.25	718.75	812.5	8712.5
Colddrinks			228.75	262.5									491.25
Hot drinks	370	286	468	584	450	410	508	577	449	455	493	426	5476
Kakes													
Pastry	442	566	617	87	552	714	648	721	618	601	653	748	6967
Paztry													
Sandwich													
Sandwiches	435	474	519	675	540	591	675	663	534	552	510	537	6705
Grand Total	4022.25	3263.5	4877.75	5456.5	4869.75	5103.75	5772.5	5846.25	4838	4915.25	4651.25	5125.5	58742.25

2021	1	2	3	4	5	6	7	8	9	10	11	12	2021 Total
587.5	687.5	727.5	845	410	695	880	850	820	722.5	722.5	702.5	702.5	8650
1628	1570	1892	2288	1988	2146	2044	2458	1862	2150	1980	2176	2176	24182
445	758.75	843.75	940	71.25	893.75	885	1047.5	766.25	777.5	872.5	276.25	276.25	8577.5
198.75													198.75
374	462	519	625	448	456	523	578	473	510	438	476	476	5882
				225									225
403	489	460	739	682	739	698	671	617	628	732	749	749	7607
118													118
				114									114
465	519	573	690	417	558	687	642	642	585	588	582	582	6948
4219.25	4486.25	5015.25	6127	4355.25	5487.75	5717	6246.5	5180.25	5373	5333	4961.75	4961.75	62502.25

2022	1	2	3	4	5	6	7	8	9	10	11	12	2022 Total	2032 Total	Grand Total
615	645	765	935	772.5	797.46	876.51	1087.1	496.88	795.37	908.2	668.43	9362.45	175	175	26779.95
1600	1810	2040	2340	1936	1948.8	2617.424	2905.312	2131.168	2208.08	2290.96	1683.024	25510.768	480	480	71970.768
583.75	696.25	828.75	973.75	888.75	983.83	887.14	1044.13	990.85	904.82	945.93	778.53	10506.48	157.5	157.5	27953.98
						210	257.5					467.5			1157.5
379	377	432	629	492	563.024	526.4	661.9	586.684	619.4	566.744	454.672	6287.824	98	98	17743.824
								247.5				247.5			472.5
556	628	643	674	693	763.12	931.648	944.592	787.496	795.692	803.02	638.156	8857.724			23431.724
			178									178			440
				120						207		327			441
456	561	585	669	411	606.96	731.52	845.76	700.272	405.984	715.008	534.36	7221.864	126	126	21000.864
4189.75	4717.25	5293.75	6398.75	5313.25	5663.194	6780.642	7746.294	5940.85	5936.346	6229.862	4757.172	68967.11	1180.5	1180.5	191392.11

Table 4: For comparisons with the performance of the products group, sales quantity and value through quarter, year, as well as over a three-year period are benchmarked

(Source: As per given dataset)

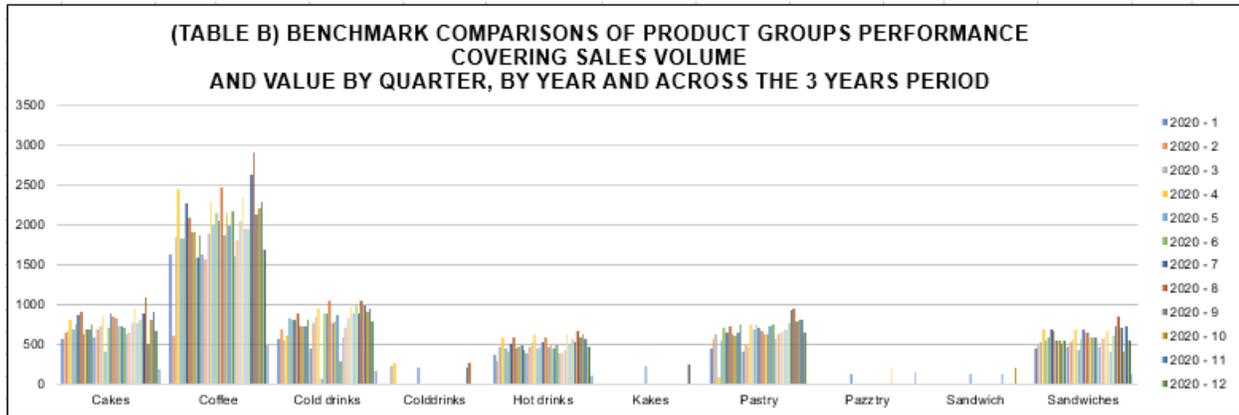


Figure 3: Products Group Performance and analysis of benchmark over a three-year period by month, year, and quarter

(Source: As per given dataset)

3.3 (Table C) Standard performance comparison of revenue values and volumes regarding coffee shops

- Unexpected trends are shown by benchmark assessments of the volume and worth of sales made by coffee shops during a three-year period.
- The greatest sales value is continually held by Blackpool, and from 2020 to 2022, it experienced sizable growth, indicating strong performance.
- Additionally, Portsmouth's revenue keeps rising over time.
- From 2021 to 2022, the marketplace value dramatically rose despite Southam's lower volume.
- These assessments help identify regional differences in coffee shop effectiveness and can guide strategic decisions for each location, regarding marketing campaigns or product promotions, to maximise results for the whole chain.

(Table C) Benchmark comparisons of sales volume and value between coffee shops by quarter, by year and across the 3 years period

Row Labels	2020	2021	2022	2032	Grand Total
Blackpool					
Sum of Sales Value	26564	27831	33385.36		87780.36
Count of Sales Volume	72	72	72		216
Portsmouth					
Sum of Sales Value	18483.75	20298.75	21876.75		60659.25
Count of Sales Volume	72	72	72		216
Southam					
Sum of Sales Value		684	1609.5	126	2419.5
Count of Sales Volume		3	7	1	11
Southampton					
Sum of Sales Value	13694.5	13688.5	12095.5	1054.5	40533
Count of Sales Volume	72	69	59	5	205
Total Sum of Sales Valu	58742.25	62502.25	68967.11	1180.5	191392.11
Total Count of Sales Vo	216	216	210	6	648

Table 5: Performance category of COTS products by month, year and quarter

(Source: As per given dataset)

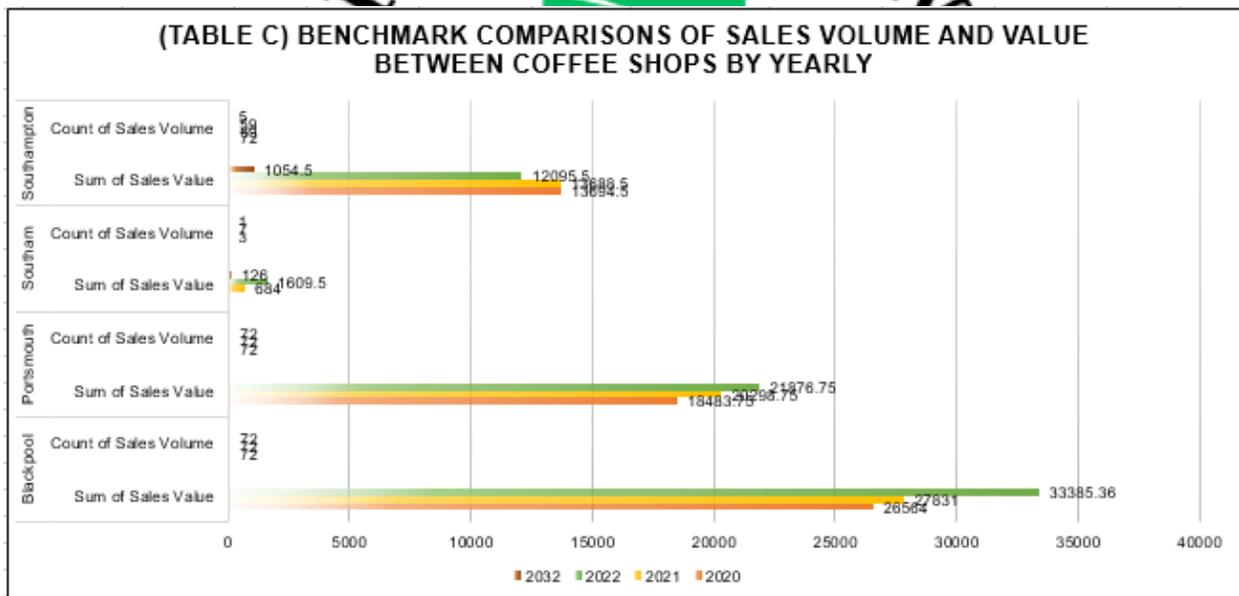


Figure 4: Benchmark comparisons of sales volume and value between coffee shops by yearly

(Source: As per given dataset)

Task Four: Commentary on data visualisation

4.1 (Chart A): Analysis of revenue trends and comparison across coffee shops overtime

- Coffee shops evaluate their financial viability as a function of sales volume in order to regulate their economic relevance. Items are sorted sequentially and include cakes, coffee, hot and cold drinks, pastries, sandwiches, and coffee.
- The sale's worth is described in order to lessen their financial importance. The financial improvements in this inquiry are treated according to the financial features they possess to decide on their monetary treatments.
- As a result, the cumulative sales of the coffee shops in Blackpool, Portsmouth, Southam, and Southampton are 87780, 60659, 2419.5, and 40533 respectively. The total sales have been 191392.

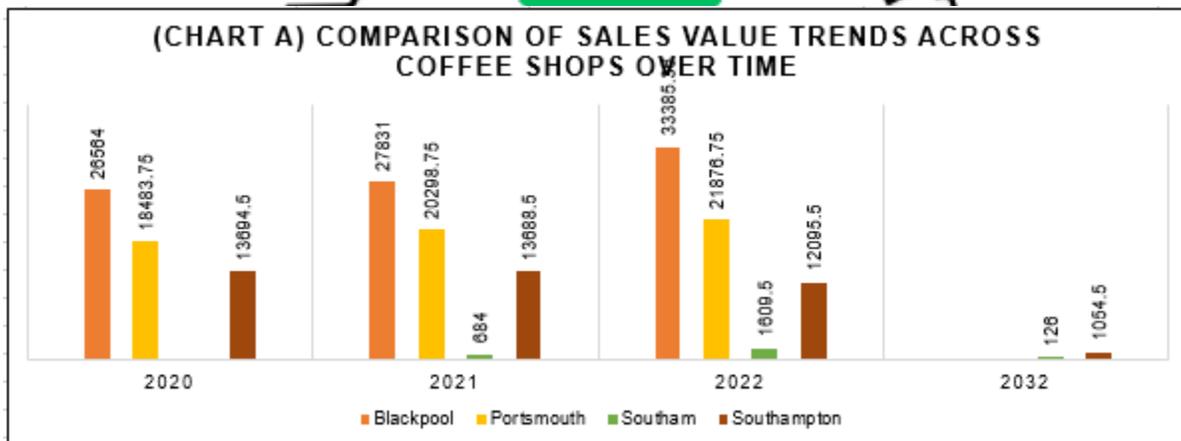


Figure 5: Justify the comparison of sales between coffee shops over

(Source: As per given dataset)

4.2 (Chart B): Product category performance across coffee shops overtime

- The sales values of Cakes in Blackpool are 12614.95, in Portsmouth they are 8205, and in Southampton, they are 5790, according to COTS all coffee shops. 26,609.95 were the total sales for Cake.
- There were a total of 22146, 33284.768, & 15464 dollars earned through selling coffee in Southampton, correspondingly. When they were all added up, there were 70894.768 COTS revenues.

- Cold beverage sales generated 13335.23 in Blackpool, 8433.75 in Portsmouth, and 5917.5 in Southampton. As a result, the total sales amount was 27686.48.
- In that order, Blackpool (7848), Southampton (4872), and Blackpool (10565.724) sold the greatest number of pastries. Total income from the other sales came to 23285.724.
- Blackpool, Portsmouth, and Southampton each generated a total revenue from deals of all items of 87780.36, 59289.75, and 39569.5 respectively, according to the aforementioned survey.

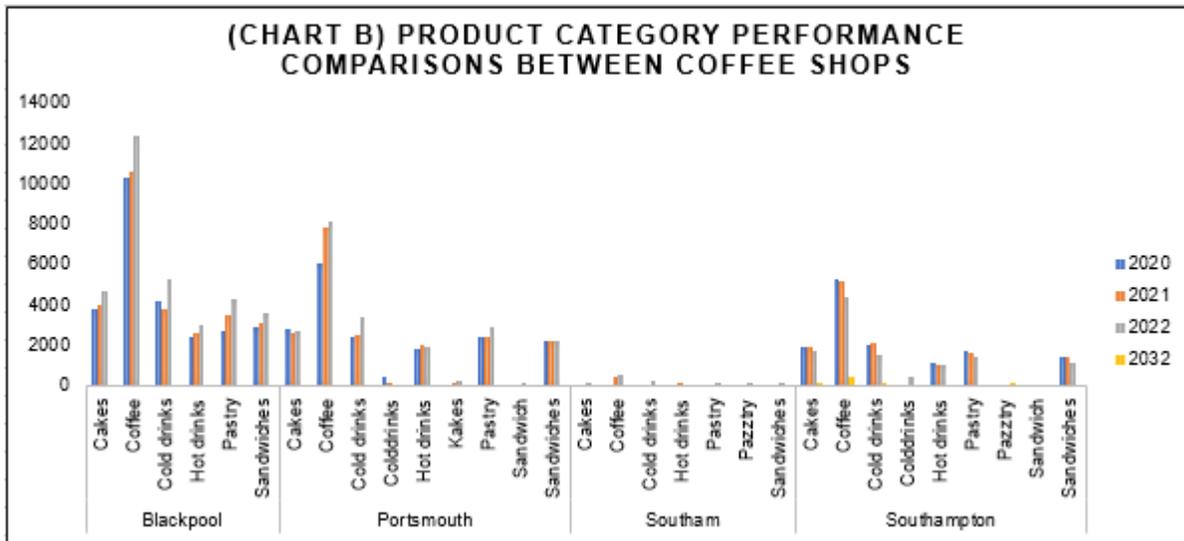


Figure 6: Performance of the categorised product comparisons among coffee shops

(Source: As per given dataset)

4.3 (Chart C): Compared to other cities, how do supply services affect households in the Blackpool area?

- A summary of the services offered by Blackpool's coffee shops has been distributed through the delivery of items to homes. To boost client happiness and assistance, this will be made available.
- Based on COTS accounting operations, research on rising sales at Blackpool coffee shops justifies the idea of home delivery.
- The financial performance of Blackpool in the years 2021, 2020, and 2022 is seen in the graph here. 26564, 27831, & 33385.36 were the values in 2020.

- In addition, Portsmouth's revenue in 2020 was \$1483.75, \$1298.375, and \$2176.75 in 2021, 2021, and 2022, respectively.
- Finally, the Southampton coffee shop made 13694.5 in 2020, 13688.5 in 2021, and 12095.5 in 2022.

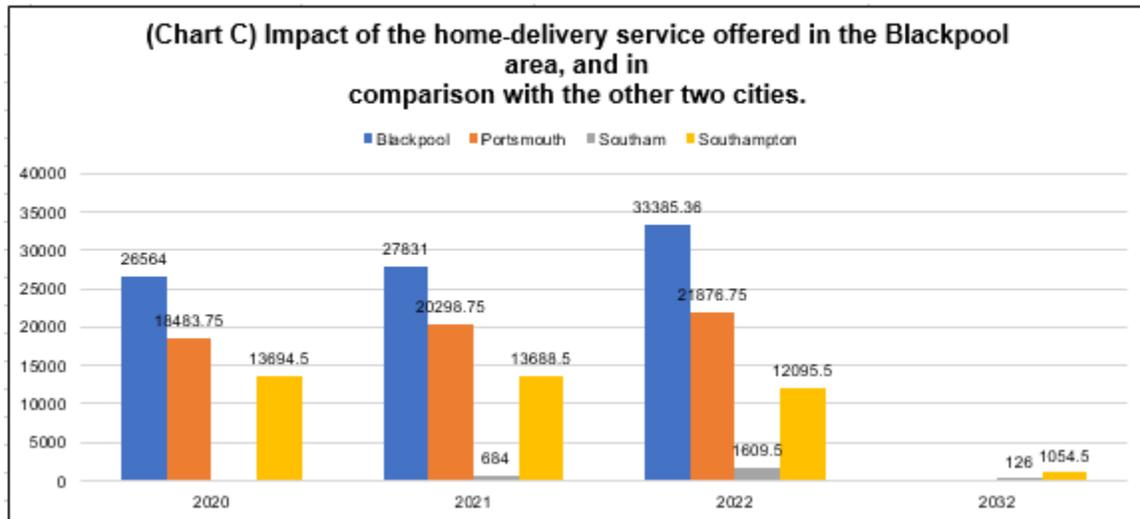


Figure 7: Performance comparison regarding coffee shops' home-delivery service in Blackpool Area

(Source: As per given dataset)

Task 5: COTS Data-Driven’s home-delivery services across “the Blackpool area?”

5.1 Recommendations

Future Strategies

The financial importance may describe the management improvements of COTS data-driven analysis. During this analysis, the financial recommendations of COTS are enhanced to define Brighton’s marketing dynamics. However, there are different types of future strategies discussed below:

Engaging the product expansion: Considering the successful operation of the Brighton shop and potential market developments. The primary goal of COTS's development should be in cities where there is a high demand for coffee shops and minimal resistance from major chains like Costa, Café Nero, and Starbucks. Additionally, this research

should be done to identify other possible development areas because the data suggests that Brighton would be an attractive place for expanding coffee shop businesses (Khadka, *et.al*, 2019).

Affecting the product offerings: In order to boost COTS's total profitability per customer, the company should concentrate on increasing its range of services. The two distinct groups of goods which have performed the best, based on the research, are pastries and coffee. The level of quality, variety, and look of COTS must thus be increased in order to increase demand and increase sales (Romdonny and Rosmadi, 2019). It is necessary to assess any potential enhancements or alterations for the problematic goods, including cold beverages and pastries.

Improving client enhancement: According to the COTS, it is important to appreciate the interactions between consumers at every coffee shop. Providing expert offers, developing a welcoming environment, and ensuring the products are dependable and of the highest calibre may all help achieve this (Kopelovich, *et.al*, 2021). It may also be possible to identify issue areas and improve customer retention by implementing rewards systems and soliciting feedback from customers.

Research Objectives

Issue 1: Compare the selling costs & volumes for the three coffee shops to decide which will contribute towards increasing the floor area.

Issue 1: Perform a sales value and volume analysis of the three coffee shops to identify the

Values		
Row Labels	Count of Sales Volume	Sum of Sales Value
Blackpool	216	87780.36
2020	72	26564
2021	72	27831
2022	72	33385.36
Portsmouth	216	60659.25
2020	72	18483.75
2021	72	20298.75
2022	72	21876.75
Southam	11	2419.5
2021	3	684
2022	7	1609.5
2032	1	126
Southampton	205	40533
2020	72	13694.5
2021	69	13688.5
2022	59	12095.5
2032	5	1054.5
Grand Total	648	191392.11

Table 6: Determinate the Issue 1

(Source: As per given dataset)

An objective evaluation of effectiveness has been examined when evaluating the leadership upgrades during the several coffee shops operated by COTS. According to the study in that article, by taking into account the economic viability of these kinds of coffee shops, it is feasible to measure changes in the operational field with revenue effects.

Issue 2: Analyse the product line-up to determine which items are most likely to be dropped from the menus of the merchants owing to low sales.

<i>Issue 2: Perform an analysis of the product offering to identify those products with the worst sales performance which are the candidates to be removed from the shops' menu</i>						
Sum of Sales Value	Column Labels					
Row Labels		2020	2021	2022	2032	Grand Total
Cakes		8592.5	8650	9362.45	175	26779.95
Coffee		21798	24182	25510.77	480	71970.768
Cold drinks		8712.5	8577.5	10506.48	157.5	27953.98
Colddrinks		491.25	198.75	467.5		1157.5
Hot drinks		5476	5882	6287.824	98	17743.824
Kakes			225	247.5		472.5
Pastry		6967	7607	8857.724		23431.724
Pazztry			118	178	144	440
Sandwich			114	327		441
Sandwiches		6705	6948	7221.864	126	21000.864
Grand Total		58742.25	62502.25	68967.11	1180.5	191392.11

Table 7: Determinate Issue 2

(Source: As per given dataset)

The bulk of the lowest selling items in the research are Colddrinks, Kakes, Pazztry and Sandwich. The financial requirements of COTS were assessed by treating production and distribution as two distinct, large orders. When assessing the financial viability of building the coffee shop, this may be considered.

Issue 3: The Blackpool home delivery service had a positive impact on the store's ability to generate sales.

<i>Issue 3: Did the home delivery service offered in Blackpool have a positive impact on the sales performance of the shop?</i>						
Sum of Sales Value	Column Labels					
Row Labels		2020	2021	2022	2032	Grand Total
Blackpool		26564	27831	33385.36		87780.36
Portsmouth		18483.75	20298.75	21876.75		60659.25
Southam			684	1609.5	126	2419.5
Southampton		13694.5	13688.5	12095.5	1054.5	40533
Grand Total		58742.25	62502.25	68967.11	1180.5	191392.11

Table 8: Determinate Issue 3

(Source: As per given dataset)

By assessing the capable management & strict financial control of Blackpool. Upon completion of this process, COTS may utilise its more precise financial forecasts when making management decisions. An analysis of previous financial talks is used in this

investigation to better understand supply shifts. In the papers, the requirements governing the evaluation's outcomes were outlined, along with their effects on the budget.

5.2 Conclusion

The COTS financial information procedures have been evaluated by a study of the data. The objectives were to evaluate and match COTS's commercial strategy with its economic principles. Building COTS's goals and important targets required the establishment of Task 1's key performance indicators, which in particular made it possible to measure the financial components. With a focus on specific COTS-specific data quality challenges, Task 2 sought to discover and implement ways to reduce these budgetary restrictions. Task 3's COTS accounting data was thoroughly examined to improve the coffee shops and their use by contrasting revenues and quantities. During this stage, norms and trend evaluation were used to give data on the amount and value of COTS exports. As part of Task 4, each pricing comparison between the three coffee shops operated by COTS was also examined.



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