Driving Growth: A Data-Centric Approach for 'MK Tea Stall'

A Mid-Term report for the BDM capstone Project

Submitted by

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Content

Executive Summary

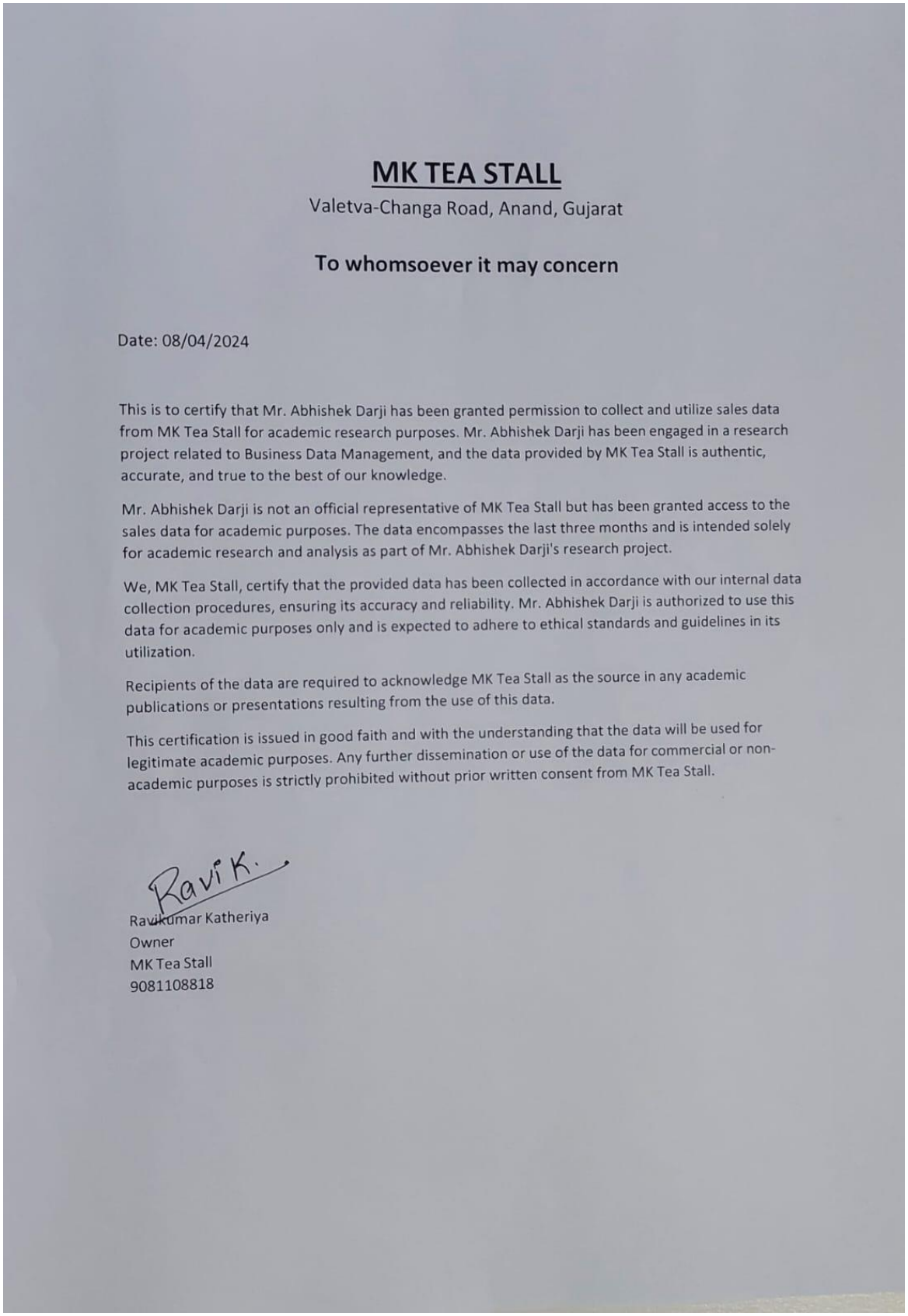
MK Tea stall is well-established snacks shop near CHARUSAT University, Anand. The business has grown to become a key player in the business environment in the near by village by providing valuable customer service and various range of products.

This report clearly states the method of collection of data and understanding it thoroughly. Manually dataset was created and further many more changes were done to gain the most insightful one. The data was stored in excel and using python and jupyter notebook, exploratory data analysis was carried out. Libraries like Numpy, Pandas, Matplotlib and seaborn is used.

Further more analysis is still left that would be carried in the future and included in the future reports. The basic analysis gave a direction to the possible solution of each of the problems that were considered. Also, few challenges were faced during the analysis, the dataset being manually collected may have few errors that have been rectified. Also, during collection, the integrity should be maintained.

The midterm report provides a comprehensive overview, addressing aspects such as the business background, problem statement, methodologies for data collection and preprocessing, metadata considerations- data segmentation and classification among different categories, descriptive statistics for providing a quick snapshot of the data, analytic processes, and culminates by presenting the results and findings. The final solution to any of the problem have not been included and the current findings will be capitalized further for finding the solutions to the problems stated

Proof of Originality



MK TEA STALL

Valetva-Changa Road, Anand, Gujarat

To whomsoever it may concern

Date: 08/04/2024

This is to certify that Mr. Abhishek Darji has been granted permission to collect and utilize sales data from MK Tea Stall for academic research purposes. Mr. Abhishek Darji has been engaged in a research project related to Business Data Management, and the data provided by MK Tea Stall is authentic, accurate, and true to the best of our knowledge.

Mr. Abhishek Darji is not an official representative of MK Tea Stall but has been granted access to the sales data for academic purposes. The data encompasses the last three months and is intended solely for academic research and analysis as part of Mr. Abhishek Darji's research project.

We, MK Tea Stall, certify that the provided data has been collected in accordance with our internal data collection procedures, ensuring its accuracy and reliability. Mr. Abhishek Darji is authorized to use this data for academic purposes only and is expected to adhere to ethical standards and guidelines in its utilization.

Recipients of the data are required to acknowledge MK Tea Stall as the source in any academic publications or presentations resulting from the use of this data.

This certification is issued in good faith and with the understanding that the data will be used for legitimate academic purposes. Any further dissemination or use of the data for commercial or non-academic purposes is strictly prohibited without prior written consent from MK Tea Stall.

Ravi K.

Ravikumar Katheriya
Owner
MK Tea Stall
9081108818

(i)-Letter from Organization

ii-Certificate of Food Security

iii – Photograph of shop

iv-Photograph of shop

Metadata and Descriptive Statistics

Metadata:

The personnel at MK Tea Stall have meticulously gathered and organized the data, storing it in a designated folder. The data comprises of sales data and waste and demand data of everyday business that was carried out. The selected dataset spans one month, it starts from 01-March-2024 to 31- March-2024.

Three datasets were collected during the whole collection span. The three datasets are-

1. Sales data
2. Waste and demand data
3. Monthly Expenditure data

The data was collected on a daily basis and was collected by manually asking for the specific requirements. The data may not be accurate due to any kind of human errors that might have been occurred at the either of the ends.

The sales records dataset consists of sales of various products build by the MK Tea Stall. Each product have been measured in the terms of plates. Each plate had a fixed amount that had to be served. The number of plates or units sold have been measured by an individual for daily sales records.

Particular	Unit
Debhri	100 g per plate
Dalwada	100 g per plate
Samosa	3 units per plate
French Fries	100 g per plate
Tea	Cups
Gathiya	100 g per plate
Fafda	100 g per plate

Metadata of Sales Dataset

The records of daily products that were either wasted or were demanded but weren't available have been also collected from the MK Tea stall. This helps to analyze the requirement of managing the inventory. The number of plates wasted or potential demand is always measured in the number plates and units. The metadata of this dataset is that Positive values denote the number of particulars wasted that day and Negative value denote the particulars that were demanded that day.

The third dataset has no direct implementation on the overall analysis of the project. But the third dataset is essential is getting the profit ratio and analysis the expenditure of the operations taking place in a month. The sheet consists of raw materials used in a month, there expenditure and other investments. The raw materials have been collected from various

different sources due to the remote location of the shop. Also, various products were bought as per the requirements and were noted approximately.

Also, one more dataset have been prepared by collecting the prices of the each particular. Price of each particular being fix have been decided as per each plate or unit. This dataset was just registering the prices by asking to the owner. This helps in getting the revenue generated by combining the price data and the sales data.

Descriptive Analysis:

Descriptive statistics analysis has been conducted on the sales and revenue data to present a comprehensive overview of key characteristics within the dataset. This analysis offers valuable insights into the dataset's central tendencies, minimum, maximum and other important values of that dataset.

	Debhri	Dalwada	Samosa	French Fries	Tea	Gathiya	Fafda
count	31.000000	31.000000	31.000000	31.000000	31.000000	31.000000	31.000000
mean	30.032258	40.354839	54.548387	24.774194	206.612903	24.322581	20.387097
std	3.071198	2.627399	2.419900	1.944388	9.694251	1.955967	2.076494
min	22.000000	34.000000	49.000000	21.000000	190.000000	19.000000	16.000000
25%	28.500000	38.500000	53.000000	24.000000	200.000000	23.000000	19.000000
50%	31.000000	41.000000	55.000000	24.000000	205.000000	25.000000	21.000000
75%	32.000000	42.000000	56.000000	26.000000	212.500000	26.000000	22.000000
max	35.000000	45.000000	59.000000	29.000000	230.000000	27.000000	24.000000

Descriptive Analysis of sales data

The descriptive analysis of revenue data has been shown below. The analysis of sales data for each product have been carried out and minimum, maximum and mean values have been written for each product.

	Debhri	Dalwada	Samosa	French Fries	Tea	Gathiya	Fafda	Samsosa
count	31.000000	31.000000	31.000000	31.000000	31.000000	31.000000	31.000000	31.000000
mean	600.645161	807.096774	54.548387	990.967742	2066.129032	1216.129032	1019.354839	1090.967742
std	61.423963	52.547981	2.419900	77.775525	96.942506	97.798344	103.824708	48.397992
min	440.000000	680.000000	49.000000	840.000000	1900.000000	950.000000	800.000000	980.000000
25%	570.000000	770.000000	53.000000	960.000000	2000.000000	1150.000000	950.000000	1060.000000
50%	620.000000	820.000000	55.000000	960.000000	2050.000000	1250.000000	1050.000000	1100.000000
75%	640.000000	840.000000	56.000000	1040.000000	2125.000000	1300.000000	1100.000000	1120.000000
max	700.000000	900.000000	59.000000	1160.000000	2300.000000	1350.000000	1200.000000	1180.000000

Descriptive analysis of Revenue dataset

Detailed Explanation of Analysis Process/Method

The dataset has been created by the individual by manually collection of data from the MK Tea Stall. Since it is an unorganized business, values were collected in excel sheets and various types of datasets were collected. Sales, Waste and demand and expenditure dataset was collected directly from the shop owner. Revenue dataset was created manually combining the prices and sales dataset. The expenditure dataset was created by collecting the average expenditure of particular day of each product and finding the expenditure of total month.

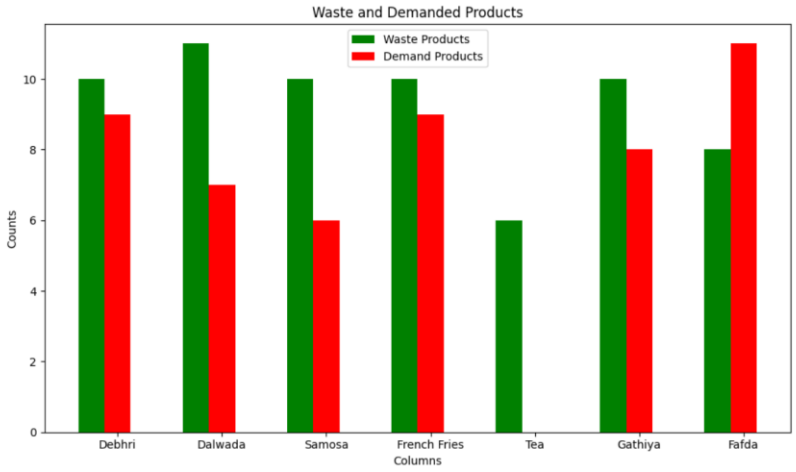
Concerned about minimizing wastes and managing current inventory, The dataset about waste and demand of products was created. Analysis of the dataset using how frequently the products are wasted and the number of products has been carried out. Same thing goes with the demand of products that weren't available. Bar charts about the counts was created.

Revenue share of each product was shown using pie chart. Profits made every day was calculated using the revenue dataset and expenditure dataset. Expenditure of whole month was provided which was then divided by the number of days. The profits earned every day has been shown on line chart.

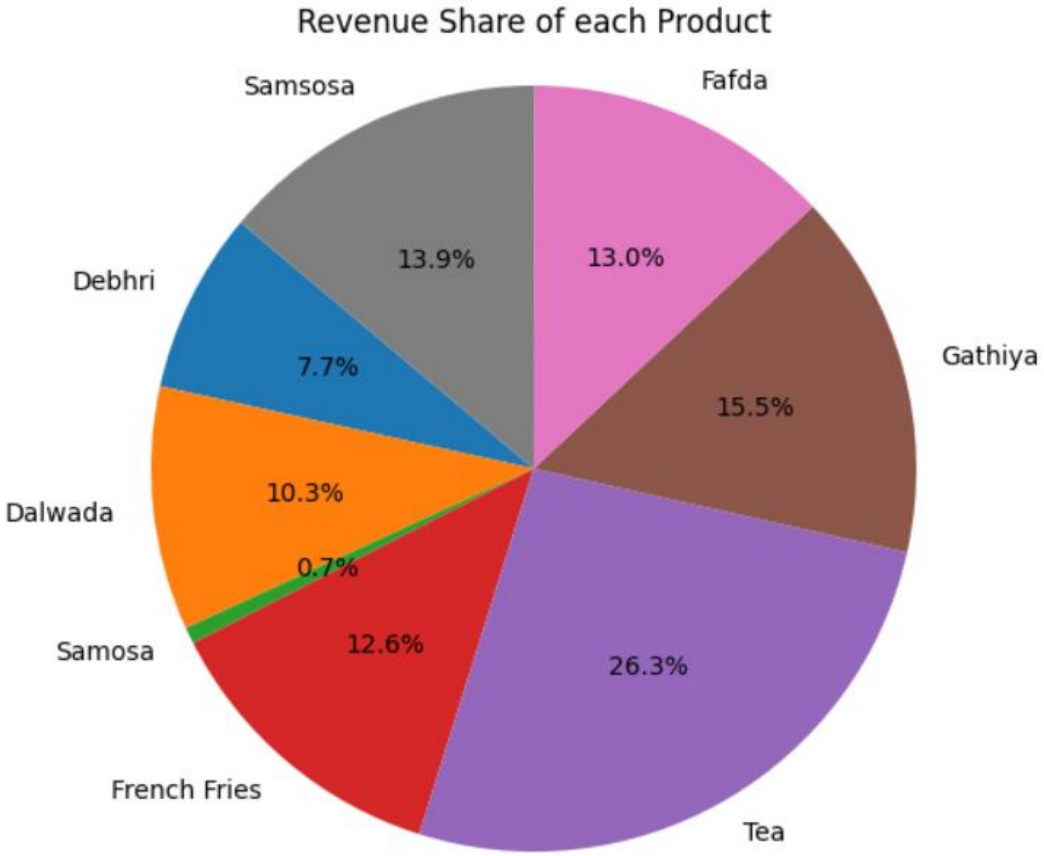
The utilization of these descriptive statistics and visualizations contributes to a comprehensive understanding of the data, facilitating informed decision-making and optimized business strategies for enhanced performance and profitability.

Results and Findings

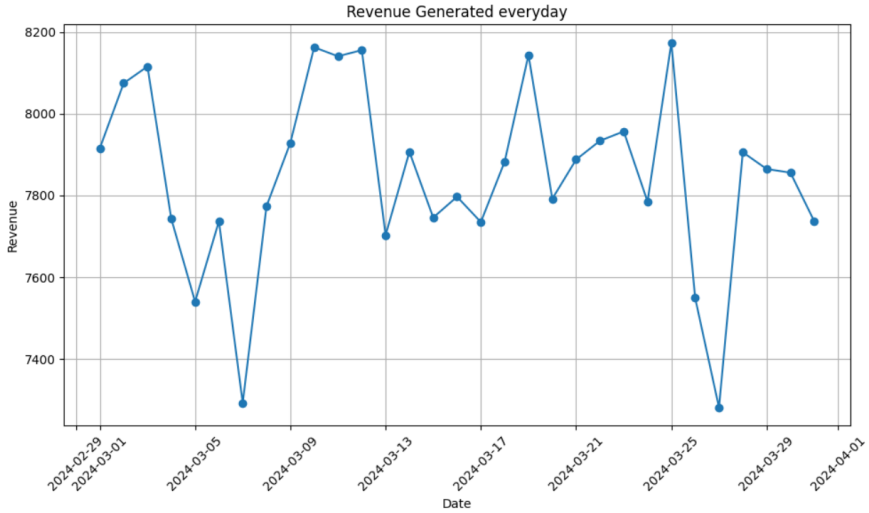
1. The grouped bar chart helps us to gain knowledge about the nature of each of th e product. Products like Dalwada, samosa and tea were wasted a lot through out the month. Whereas products like French Fries and Fafda were in demand but weren't available during the sales. This helps us to study about the inventory of the store. Regression methods can be further used to find the relation between wastes and inventories.



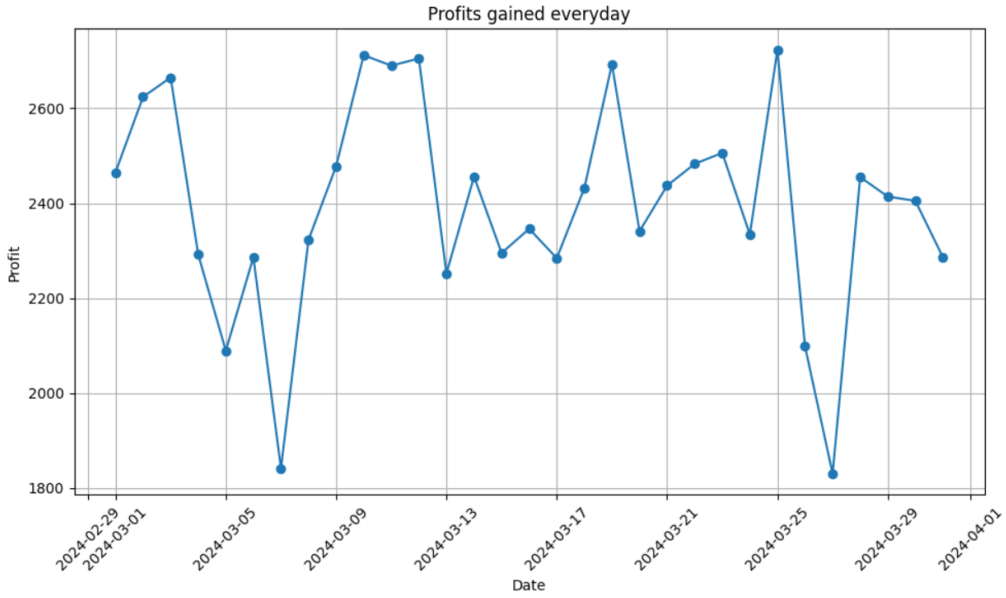
2. The pie chart about the revenue shows us about which product has been in most demand and generated the most revenue throughout the month. Tea , Gathiya and Fafda have share of more than 50%. This helps to get the insights about the profit margins.



3. Line chart shown below about the revenue generated shows the specific revenue generated on daily basis. This can be further used for finding relations with the potential loss incurred due to wastes and not able to meet the demands. Also will be used in finding the operational inefficiencies.



4. Line chart about the profits show the profit gained on daily bases. A minimum of Rs 1800 profit have been gained on daily basis and went maximum over Rs 2600. Few spikes have been noticed on few days. This will be further capitalized to gain the solution on getting more profits.



Appendix-1

Link for the dataset collected -
https://drive.google.com/drive/folders/156UUL2w4UEzsuFVji0lTAQ644Bhh8gsz?usp=drive_link