

Optimizing Operations and Enhancing Profitability: A Comprehensive Analysis of Inaya Cakezz

A Final Report for the BDM capstone Project

Submitted by

Name: Ali Jawad

Roll number: 22f3001825



IITM Online BS Degree Program,

Indian Institute of Technology, Madras, Chennai

Tamil Nadu, India, 600036

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1. Executive Summary

Inaya Cakezz, a medium-sized retail bakery located in Sahu Market, Shivsagar, Sasaram, derives the majority of its revenue from cakes. The bakery faces challenges in cake order fulfillment and delivery efficiency. This report analyzes Inaya Cakezz's sales data from July 2021 to December 2023, focusing on sales trends, customer demographics, product performance, financial analysis, and delivery optimization. The goal is to provide actionable insights and strategic recommendations for enhancing profitability and sustainable growth..

Key Findings:

Sales Trends and Performance:

- A 206% growth in order volume in 2023 compared to 2022.
- Seasonal peaks in September and December indicate the impact of festive seasons and promotions.
- December consistently shows the highest revenue.

Product Performance:

- Half-kilogram cakes account for 58% of total orders, while one-kilogram cakes make up 29%.
- Chocolate is the most popular flavor (79% of sales), followed by Pineapple, Vanilla, Strawberry, and Butterscotch. Vanilla has the highest profit margin.

Customer Demographics:

- High-performing locations: Shivsagar, Pakhnari, and Bamhaur.
- Moderately performing locations: Sonhar, Bhadarshila, and Tekari.
- Low-performing areas need further investigation for market penetration feasibility.

Peak Delivery Time:

- High concentration of deliveries between 3 PM and 6 PM, peaking at 6 PM.

Financial Analysis:

- Significant revenue growth from 2021 to 2023 with consistent profit margins.
- Vanilla and Mango flavors show the highest ROI; Chocolate has moderate ROI.

Recommendations:

- Enhance promotional activities during peak seasons.
- Promote larger cake sizes.
- Diversify flavor promotions, focusing on high-margin flavors.
- Increase marketing efforts in moderately performing locations.
- Optimize delivery operations to manage peak times.
- Continuously monitor and adapt marketing and operational strategies.
- Review and optimize cost structures for lower ROI flavors.

Implementing these recommendations will strengthen Inaya Cakezz's market position, improve customer satisfaction, and ensure sustainable financial growth.

2. Detailed Explanation of Analysis Process/Method

Gathering and Cleaning Data

Data collection involved recording transaction records from Inaya Cakezz shop, spanning July 2021 to December 2023. Each transaction included details such as the date of order, year, month, day of the week, name, location, cake flavor, cake size, delivery time, cost price, and selling price. After entry, missing values were imputed, spelling errors were corrected, and data was converted into a specific format for analysis. This structured approach ensures data accuracy and consistency, providing a solid foundation for further research.

Statistical Analysis and Insights

After organizing the data, I perform statistical analysis to uncover insights into the sales data. Key metrics such as mean, median, mode, standard deviation, range, minimum, maximum, sum, and count are calculated for both sales volume and sales value. These statistics offer a comprehensive view of sales patterns and performance, aiding in well-informed decision-making.

Developing Strategies and Supporting Decisions

The insights from the statistical analysis help make better decisions. These findings help create and improve strategies, such as organizing delivery times, managing inventory better, launching targeted marketing campaigns, adding new cake flavors, and setting better prices. The main goals are to increase revenue, improve profits, and support sustainable growth in a changing market.

Assessing Financial Performance

Analyzing revenue is essential for understanding how well Inaya Cakezz is doing financially during the data collection period. This financial assessment helps the business owner focus on the actions that will have the most significant positive impact on the business.

Data Reporting and Visualization

Visual tools like pie charts, bar graphs, line charts, and treemaps, Scatter plot and Box plot are used to present sales trends, patterns, and comparisons. These visualizations make complex data easier to understand and communicate. For instance, treemap can show the most performing locations, helping to identify areas with the highest sales. These visual tools support data-driven decision-making and keep the business owner engaged by providing clear and accessible information.

Planning Strategic Actions

The insights from data visualizations help to plan strategic actions. By showing complex data clearly and simply, these visual tools make it easier to understand and share insights. This helps in making well-informed decisions. For example, if a treemap shows that certain locations have high sales and others have low sales, the business owner can plan marketing strategies to increase orders in areas with lower sales. Overall, these visualizations help guide the business owner in choosing the best actions to take for the future.

Continuous Improvement and Adaptation

The final phase is about continuously getting better. Inaya Cakezz does this by keeping an eye on important measures of performance, listening to what customers have to say, and staying aware of how the market is changing. By doing this, the bakery can change its strategies when needed to stay flexible and competitive. Continuous improvement is important because it helps ensure that Inaya Cakezz stays successful and relevant in the bakery industry for a long time.

3. Results & Findings

Sales Trends Analysis (July 2021 - December 2023)

- **Overall Trend:** Inaya Cakezz has shown a clear upward trend in the number of orders from July 2021 to December 2023, indicating steady growth in order volume. Specifically, there has been 206% growth happen in 2023 in comparison to 2022.
- **Seasonal Patterns:** Order volumes exhibit noticeable peaks and troughs, suggesting seasonality or periodic fluctuations. Notable spikes around September 2023 and December 2023 likely reflect seasonal demand or successful promotional events.
- **Monthly Performance:** December and September consistently achieves the highest revenue each year, with a significant spike in 2023, indicating peak sales during the season. July, November, and October also show strong revenue growth, particularly in 2023, suggesting seasonal or promotional impacts.
- **Comparative Analysis:** 2021 to 2022: Steady growth across all months with no drastic spikes suggests gradual business improvements and stable market conditions.
2022 to 2023: Pronounced growth with steeper revenue increases across all months indicates significant business improvements, a growing customer base, or successful promotional activities.
- **Stability and Variability:** Despite the overall upward trend, periods of significant fluctuation in order volume suggest the influence of external factors or internal strategies on order consistency.
- **Impact of Interventions:** The sudden increase in orders September 2022 may correlate with new marketing campaigns, product launches, or service improvements.

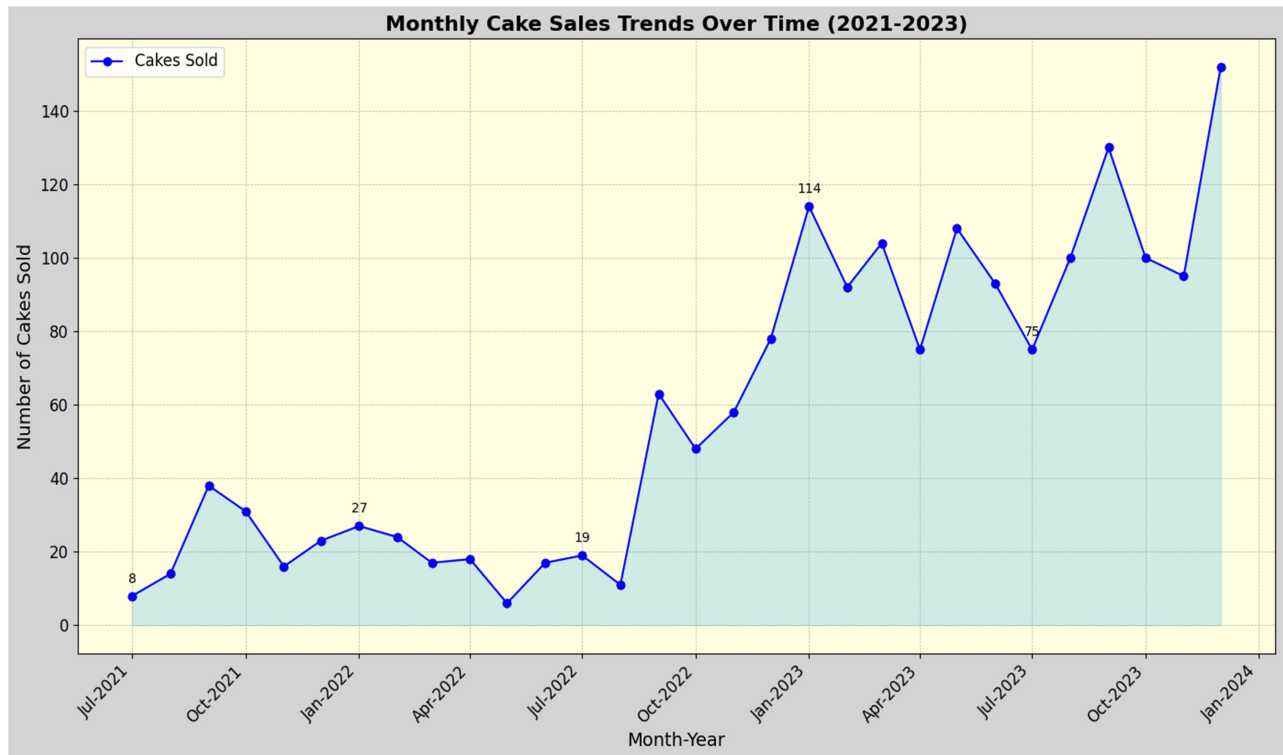


Figure 1: Monthly Cake Sales Trends Over Time (2021-2023)

Top Performing Size and Flavor

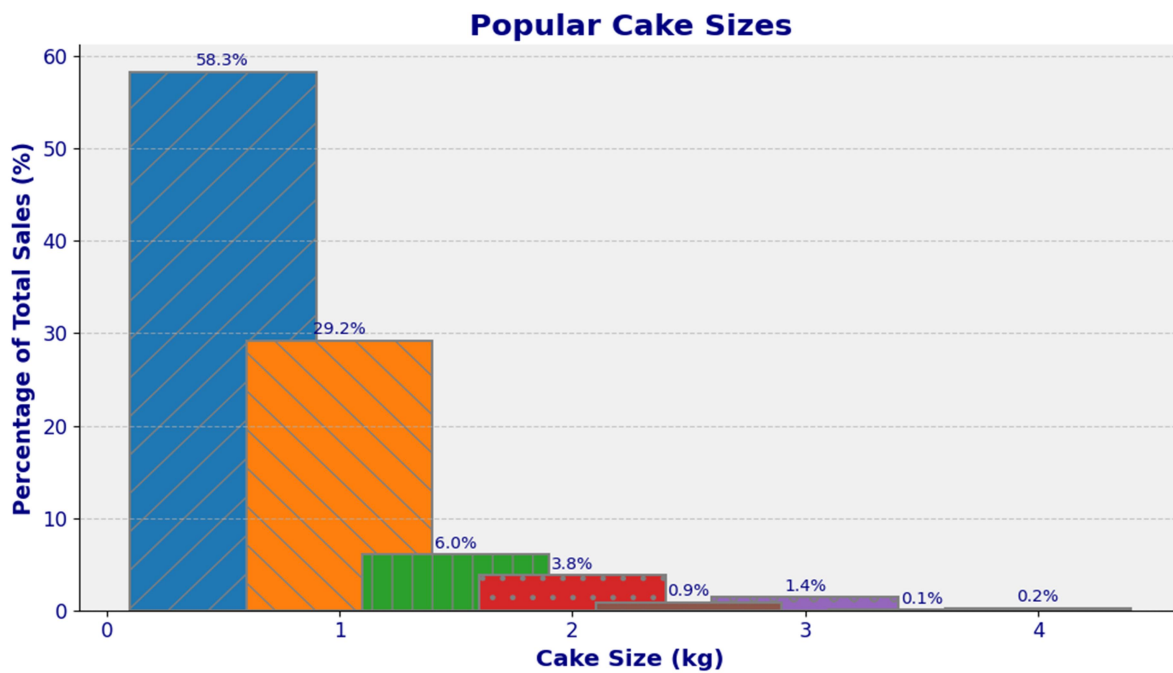


Figure 2: Popular Cake Sizes

- The half-kilogram size is the most frequently ordered by customers, accounting for approximately 58% of sales, while 1-kilogram cakes make up 29% of sales. Orders for 3-4 kilogram cakes are rare. As the cake size increases, so does the profit margin, indicating potential profitability in promoting larger cake sizes

Most Popular Cake Flavors

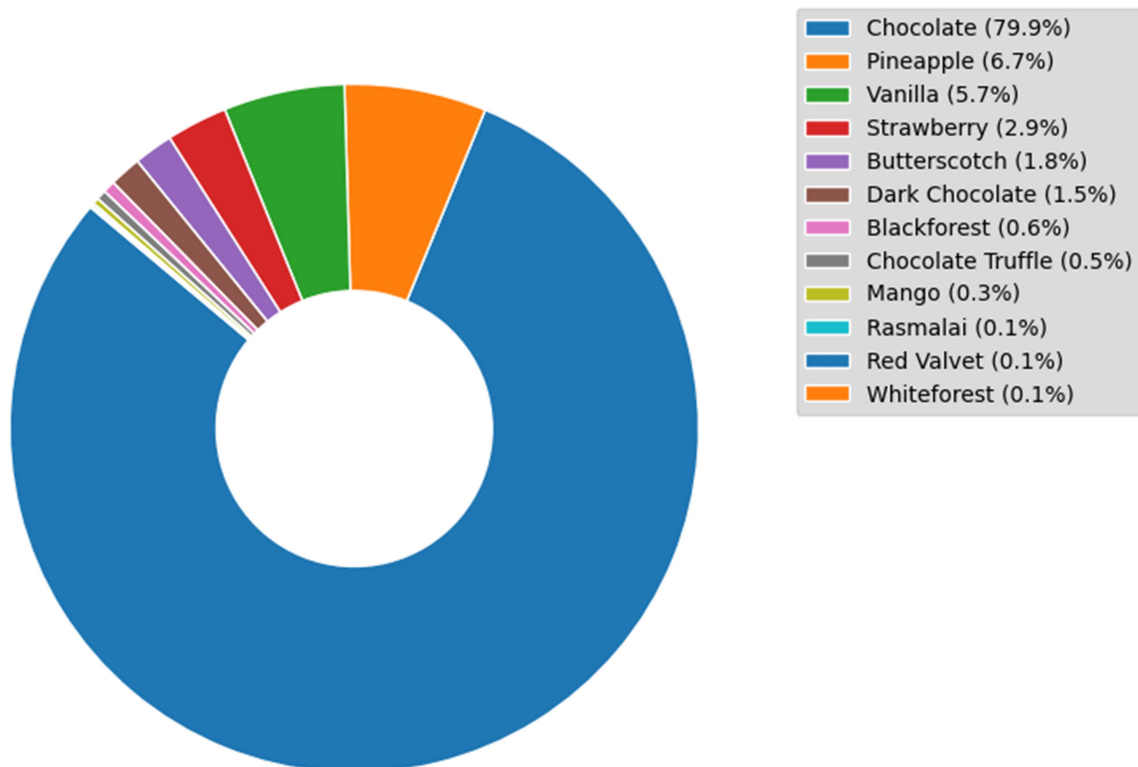


Figure 3: Most Popular Cake Flavors

- Chocolate is the best-selling flavor, accounting for approximately 79% of sales. Other popular flavors include Pineapple, Vanilla, Strawberry, and Butterscotch. Since Vanilla has the highest profit margin, promoting flavors with higher profit margins could increase overall profitability. Additionally, maintaining a stock of ingredients for the chocolate flavor during peak sales seasons is crucial due to its high demand.

Customer Demographics Analysis

High-Performing Locations:

- Shivsagar: The highest-performing location with 733 orders. It is influenced by the shop location.
- Pakhnari: The second-highest with 266 orders. It might be influenced because the owner live in this region.
- Bamhaur: The third-highest with 108 orders. It seems some marketing campaign worked successfully in this region.
- These areas are generating the most sales (order frequency more than 100) and should be maintained and possibly targeted more aggressively to maximize revenue.

Some Moderately Performing Locations:

- Locations such as Sonhar, Bhadarshila, Tekari etc. are moderately performing location, it seems there is much potential in these areas to generate more sales, and it might be achieved by implementing some good marketing techniques.
- These locations have moderate order frequencies. Consider enhancing marketing efforts or promotions to increase order volumes in these areas.

Some Low-Performing Locations:

- Locations Such as Raipur Chor, Pia Kola, Ghoda Pia, and Mojri each have only 1 order. Can be investigate if these regions can generate more sales or not.
- Other Low-Performing Locations: Numerous locations have order counts below 10.

To address low performance, investigate potential reasons such as:

- Lack of awareness
- Accessibility issues
- Local competition

Implement targeted marketing campaigns or special promotions to boost sales in these regions.

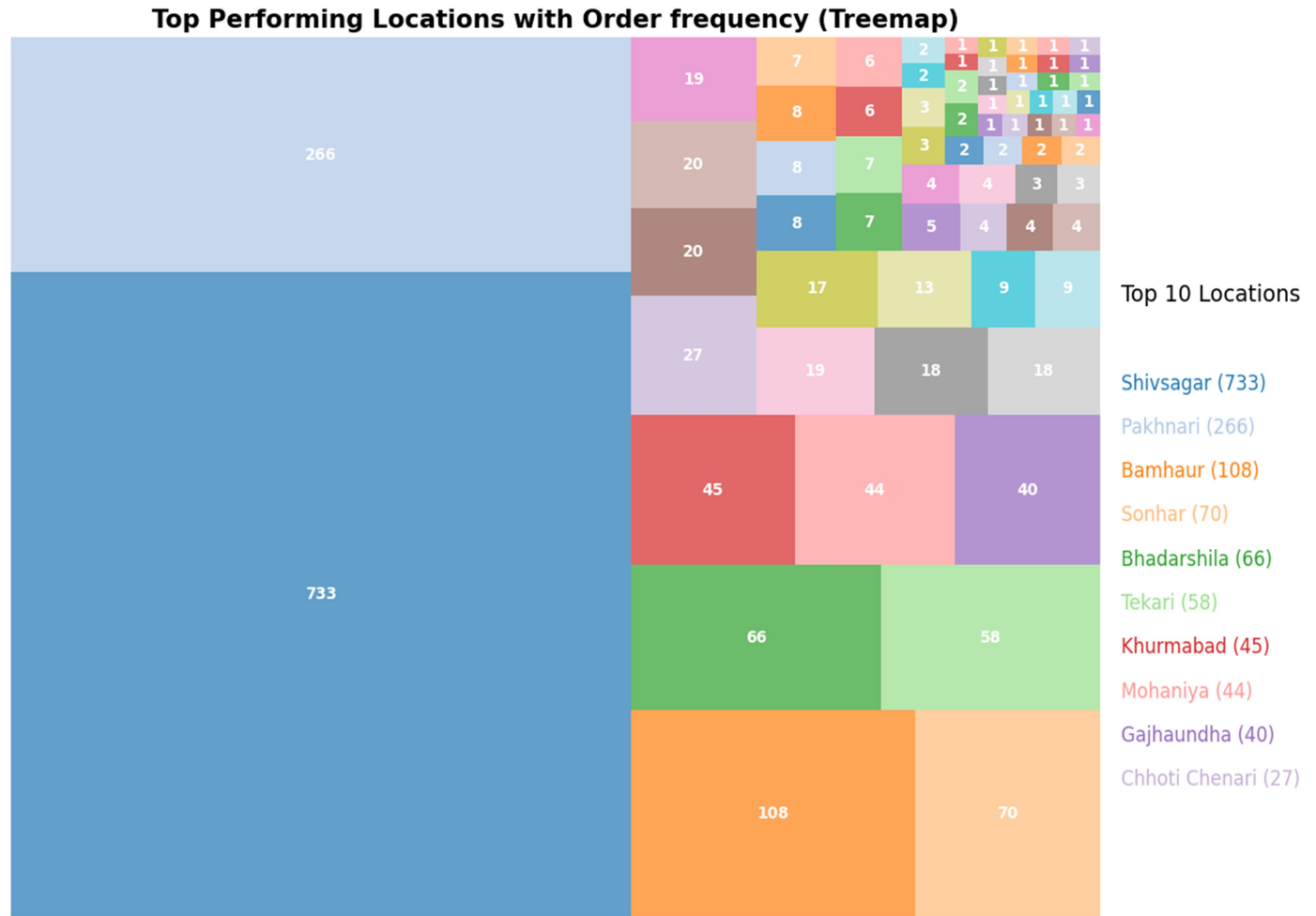


Figure 4: Top Performing Locations with Order Frequency (Treemap)

Peak delivery Time

In peak sales seasons there is need to optimize delivery schedules as there are many order deliveries which collide with same delivery time so it might be reason to occur order cancellation, or delivery delays , which can affect customer satisfaction and loyalty, which is overall not good for business, we can see from data most of the customer wants their order to be delivered in the time duration range(3PM – 6 PM) where 6 PM where the most of the deliveries happened, So there is a need of arranging schedules so most of the customer get their orders with their respective times.

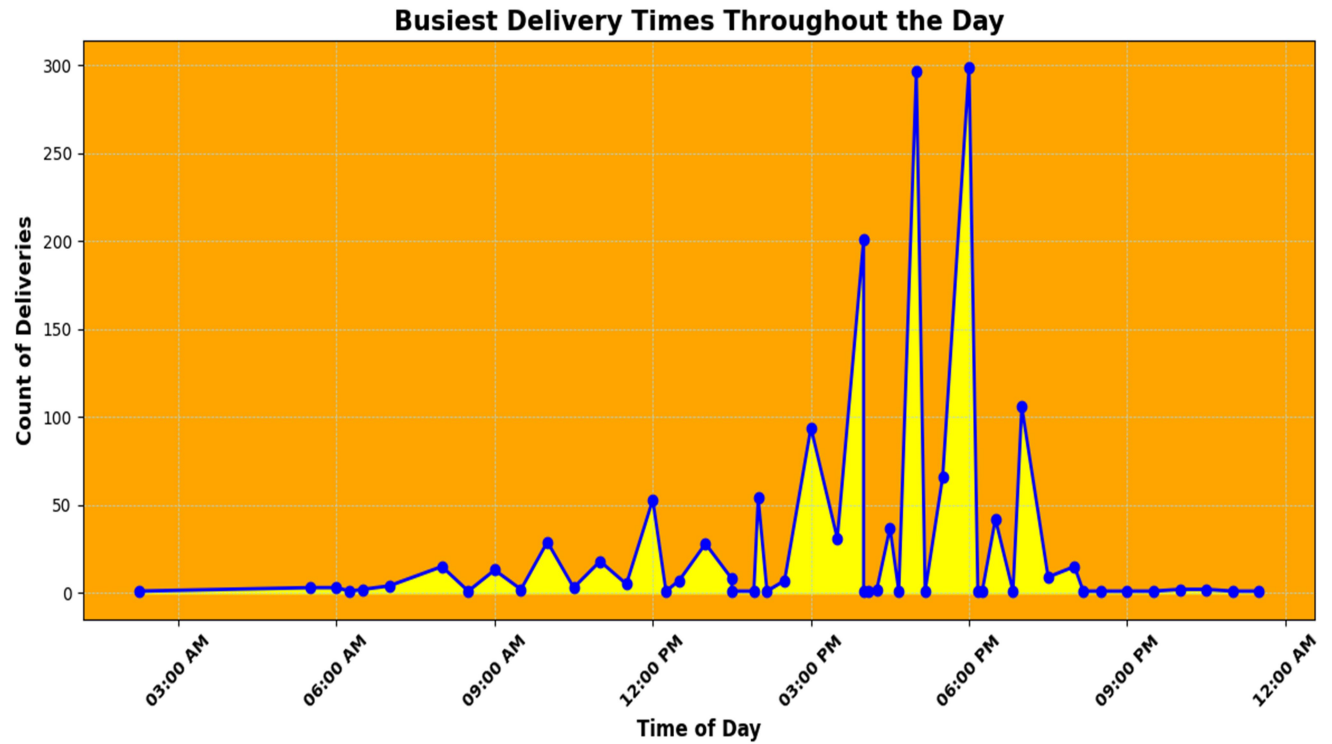


Figure 5: Peak Delivery Time

Financial Analysis

Yearly Financial Summary:

Year	Total Revenue (₹)	Total Cost of Goods Sold (COGS) (₹)	Gross Profit (₹)	Profit Margin (%)	ROI (%)
2021	₹56,210	₹28,050	₹28,160	50.10%	100.39%
2022	₹153,745	₹79,090	₹74,655	48.56%	94.39%
2023	₹472,950	₹239,300	₹233,650	49.40%	97.64%
Total	₹682,905	₹346,440	₹336,465	49.27%	97.12%

Table 1: Yearly Financial Summary

Average ROI by Cake Flavor

Vanilla and Mango flavors stand out with the highest ROI, indicating these flavors are the most profitable. Chocolate, while highly popular, exhibits a moderate ROI compared to other flavors. Flavors such as Butterscotch and Chocolate Truffle show lower ROI, suggesting potential areas for cost optimization or pricing adjustments. To maximize profitability, it is recommended to focus marketing efforts on promoting high-ROI flavors like Vanilla and Mango, while also reviewing and optimizing the cost structures for flavors with lower ROI. This balanced approach will help Inaya Cakezz enhance its overall profitability and sustain its positive financial growth. The graph illustrates the average Return on Investment (ROI) for various cake flavors sold by Inaya Cakezz.

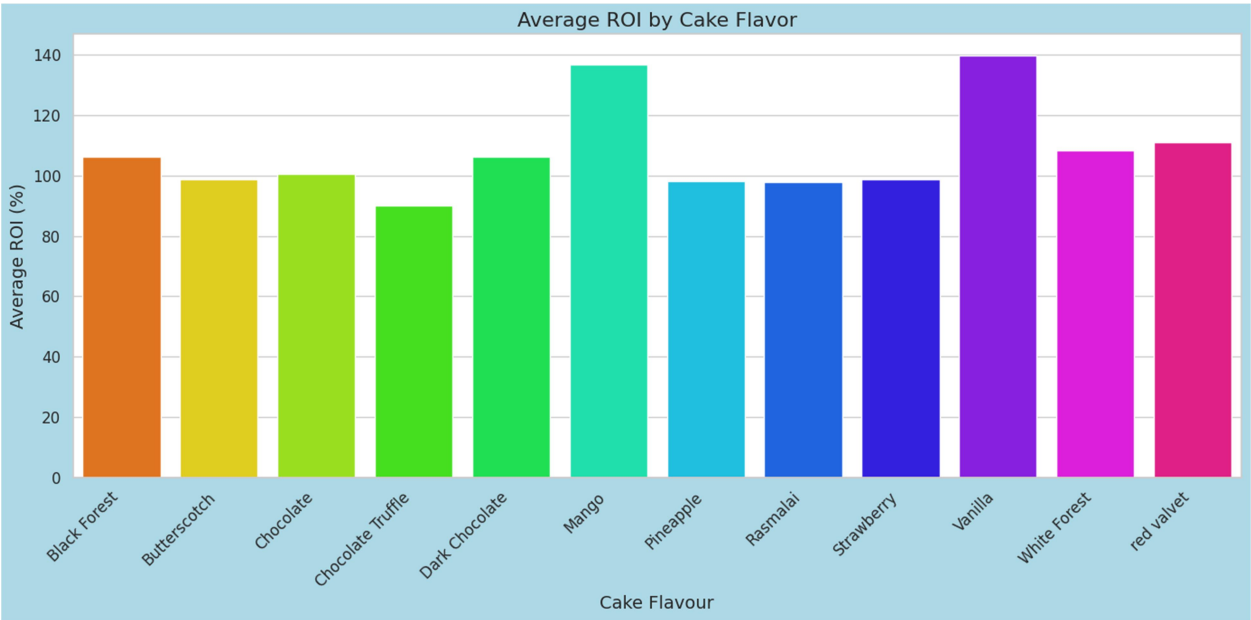


Figure 6: Average ROI by Cake Flavor

The box plot graph below illustrates the profit margin distribution for various cake flavors, providing a clear visual representation of their profitability.

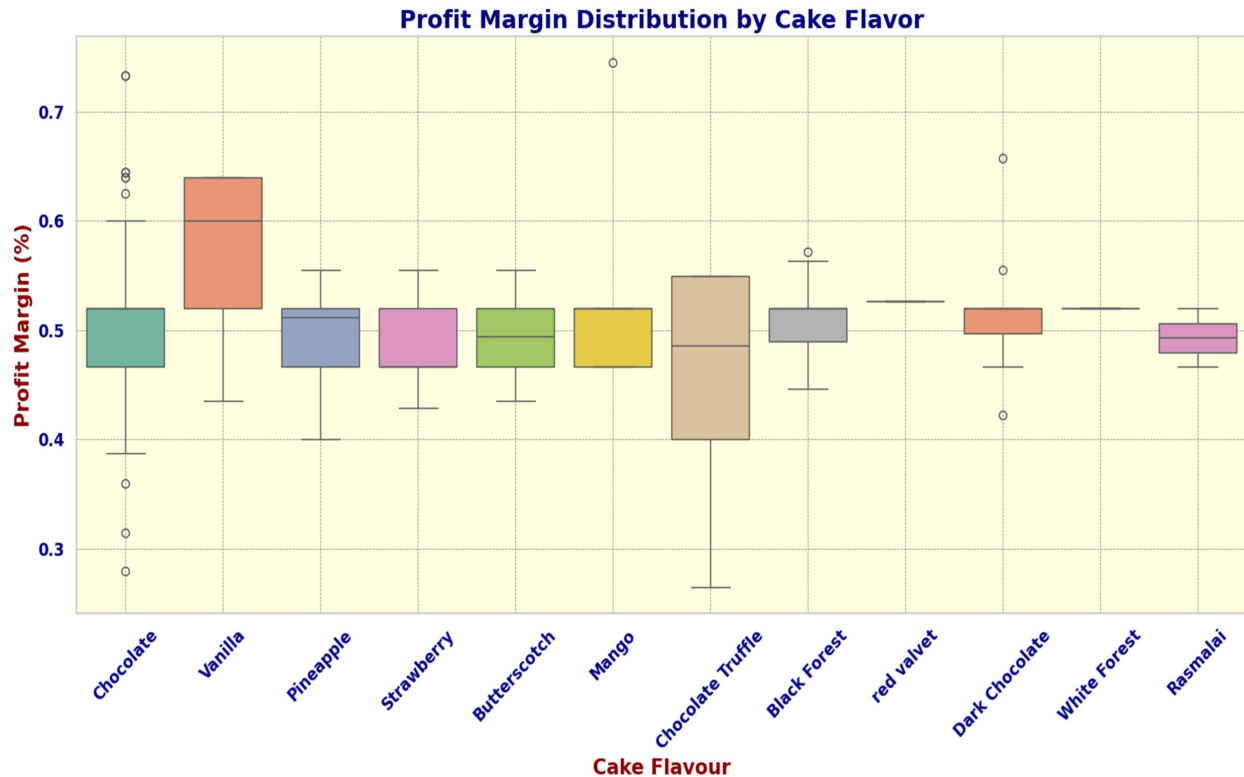


Figure 7: Profit Margin Distribution by Cake Flavor

Selling Price vs. Cost Price

The relationship between selling price and cost price at Inaya Cakezz shows a positive correlation, indicating that cakes with higher production costs are sold at higher prices. This strategy ensures that profit margins are maintained across different cake varieties. By visualizing this relationship, we can see how effectively Inaya Cakezz balances cost and revenue. The maximum selling price recorded is ₹1950, demonstrating the potential for high-profit sales when production costs are managed efficiently. This insight allows for the optimization of pricing strategies, ensuring sustainable profitability.

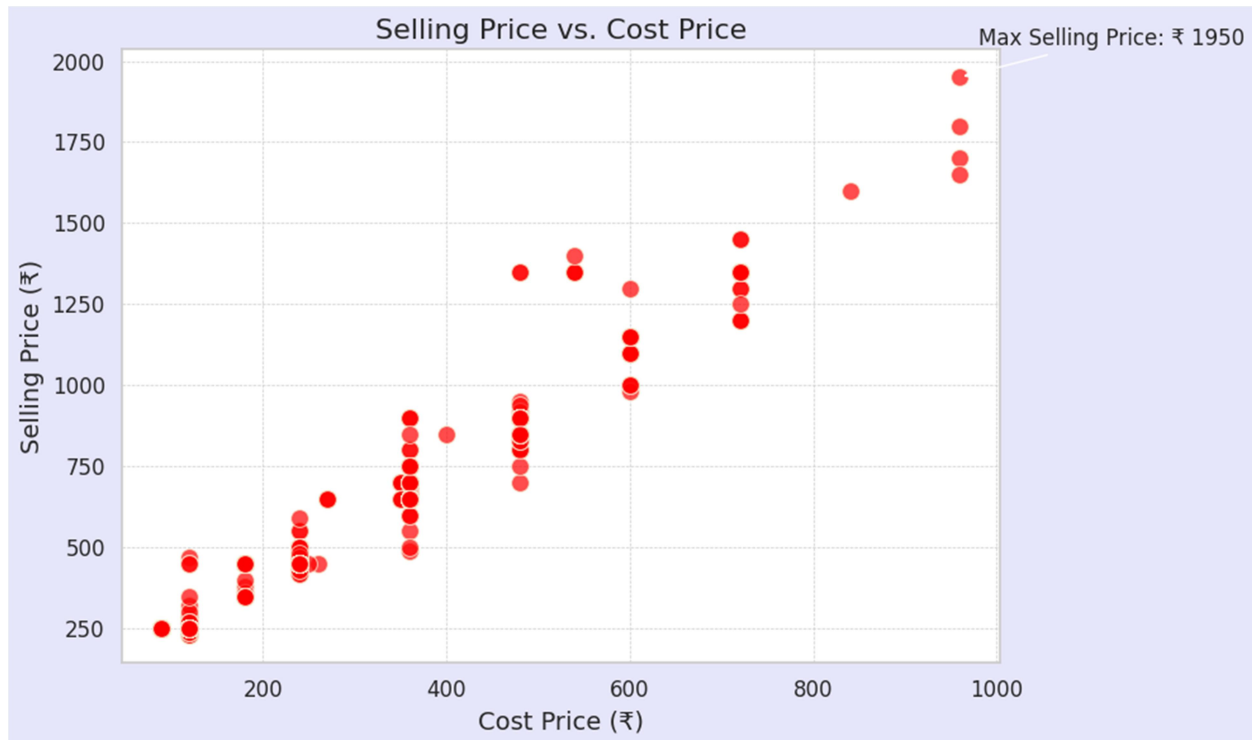


Figure 8: Selling Price vs Cost Price

Profit vs. Cost Price

The analysis of the relationship between profit and cost price at Inaya Cakezz reveals a positive correlation, where higher production costs are generally associated with higher profits. This trend is evident from the scatter plot, which shows that as the cost price of cakes increases, the profit also rises. The highest recorded profit is ₹990, demonstrating that higher-cost cakes can yield substantial profits. This insight is crucial for strategic planning, as it underscores the importance of pricing strategies that effectively balance cost and revenue to maximize profitability. By optimizing the production and pricing of higher-cost cakes, Inaya Cakezz can further enhance its profit margins.

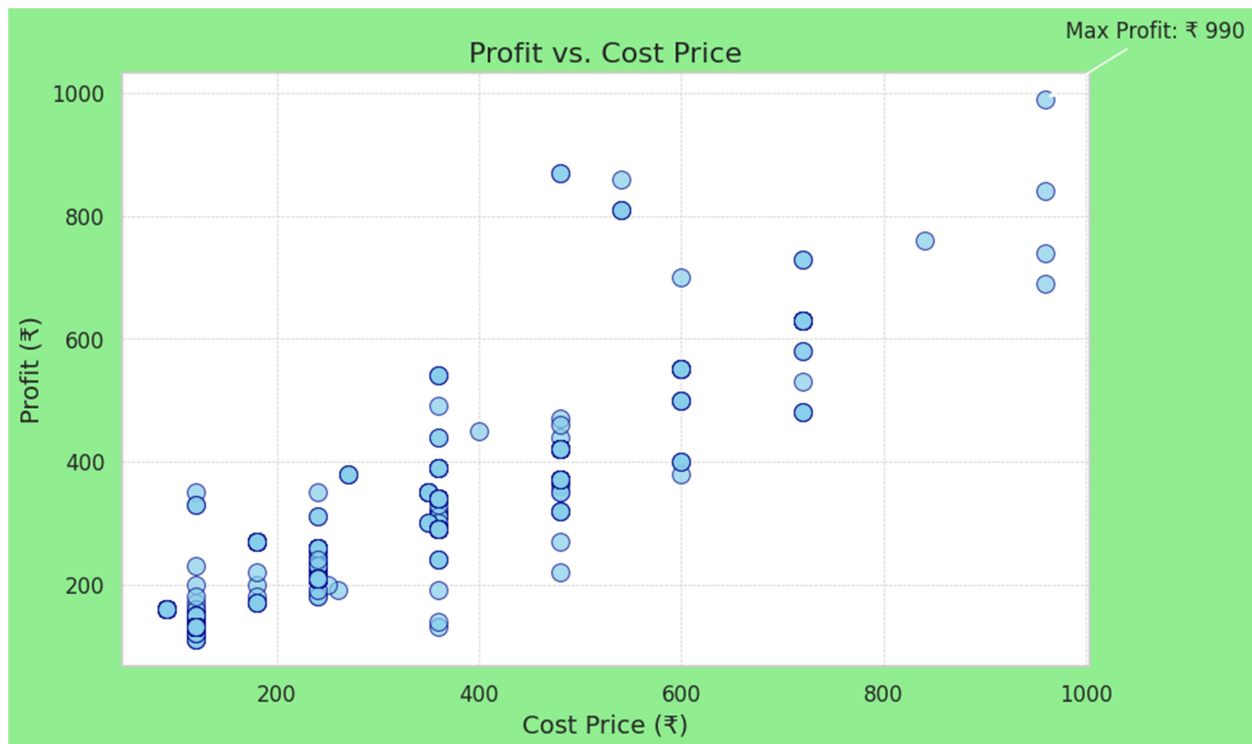


Figure 9: Profit vs Cost Price

4. Interpretation of Results and Recommendation

Interpretation of Results

Sales Trends Analysis:

The data from July 2021 to December 2023 reveals a significant upward trend in order volumes, showcasing a 206% growth in 2023 compared to 2022. This indicates that Inaya Cakezz has successfully expanded its customer base and market presence. Seasonal patterns with peaks in September and December suggest that promotional activities and festive seasons greatly influence sales. The steady increase in monthly performance, especially in December, highlights the importance of strategic promotions during holidays.

Top Performing Size and Flavor:

The half-kilogram cake size dominates sales, representing 58% of total orders, while the one-kilogram cakes account for 29%. Larger cakes, although less frequently ordered, offer higher profit margins, suggesting a potential area for increased profitability. Chocolate flavor is overwhelmingly popular, constituting 79% of sales. Promoting other high-margin flavors like Vanilla, which also enjoys high demand, could diversify sales and increase overall profitability.

Customer Demographics Analysis:

High-performing locations like Shivsagar, Pakhnari, and Bamhaur contribute significantly to sales. These areas should be the focus of sustained marketing efforts. Moderately performing locations such as Sonhar, Bhadarshila, and Tekari have untapped potential, which can be leveraged with targeted marketing strategies. Low-performing areas require further investigation to determine if market penetration is feasible or if resources should be reallocated.

Peak Delivery Time:

The analysis shows a high concentration of deliveries between 3 PM and 6 PM, particularly peaking at 6 PM. Optimizing delivery schedules during these peak times is crucial to prevent delays and cancellations, which could negatively impact customer satisfaction and loyalty.

Financial Analysis:

The financial performance from 2021 to 2023 is robust, with significant growth in revenue and consistent profit margins. The ROI analysis highlights Vanilla and Mango as the most profitable flavors, while Chocolate, despite its popularity, offers moderate ROI. There is a positive correlation between cost price and profit, indicating effective pricing strategies.

Recommendations

Enhance Promotional Activities During Peak Seasons:

- Focus on the months with high sales potential, particularly around holidays and festive seasons, to maximize revenue.
- Implement targeted promotions and discounts to boost sales during these periods.

Promote Larger Cake Sizes:

- Encourage customers to purchase larger cakes by highlighting the value and benefits, potentially through special offers or bundling deals.
- Educate customers about the variety of occasions where larger cakes could be ideal.

Diversify Flavor Promotions:

- While maintaining the supply of Chocolate cakes due to high demand, increase marketing efforts for high-margin flavors like Vanilla and Mango.
- Introduce limited-time offers and new flavors to attract different customer segments.

Targeted Marketing for Moderately Performing Locations:

- Increase marketing efforts in areas like Sonhar, Bhadarshila, and Tekari through localized advertising and community engagement.
- Conduct market research to understand the specific preferences and barriers in these locations.

Optimize Delivery Operations:

- Improve delivery scheduling and logistics to manage peak times better, ensuring timely deliveries.
- Consider investing in additional delivery resources or partnering with third-party delivery services during high-demand periods.

Continuous Monitoring and Adaptation:

- Regularly analyze sales data and customer feedback to identify emerging trends and areas for improvement.
- Stay agile and adapt marketing and operational strategies based on the latest insights and market conditions.

Financial Strategy Adjustments:

- Review and optimize the cost structures for flavors with lower ROI to enhance profitability.
- Focus on maintaining a balance between cost and revenue to ensure sustainable growth.

By implementing these recommendations, Inaya Cakezz can further strengthen its market position, improve customer satisfaction, and achieve sustainable financial growth. Continuous improvement and adaptation will be key to navigating the dynamic market and ensuring long-term success.