**IFT 533: Project-Phase-1 Planning**

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**Course:** Data Visualization & Reporting for IT

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**Section-1: Dataset Description**

**Dataset Description:**

The dataset on pizza sales contains a wealth of information related to the orders made at a pizza restaurant. With a total of 12 columns and 48,621 rows, each row corresponds to a specific order, offering insights into various aspects of the business. Here's a breakdown of the key components. Each row represents a unique order, and the columns include:

* pizza\_id: This column holds a distinctive identifier for each pizza type, aiding in tracking and categorizing different pizzas on the menu.
* order\_id: Serving as a unique identifier for each order, this column allows for the organization and analysis of customer transactions.
* pizza\_name\_id: A specific identifier assigned to each pizza name, facilitating the association of pizzas with their respective names.
* quantity: This column indicates the number of pizzas ordered within each transaction, providing insights into customer preferences and order sizes.
* order\_date: These columns provide a timestamp for each order, enabling temporal analysis and identifying patterns related to the time of day or specific dates.
* order\_time: The time of the order.
* unit\_price: Denoting the price of an individual pizza, this column is crucial for calculating total revenue and average order value.
* total\_price: Reflecting the overall cost of an order, this column contributes to the assessment of total revenue and provides a comprehensive financial overview.
* pizza\_size: Indicating the size of each pizza (e.g., Small, Medium, Large), this column categorizes orders based on their dimensions.
* pizza\_category: This column specifies the type of pizza ordered (e.g., Classic, Veggie, Chicken, Supreme), aiding in categorizing pizzas for analytical purposes.
* pizza\_ingredients: Providing a detailed list of ingredients for each pizza, this column allows for a granular analysis of the components that contribute to the variety of pizzas offered.
* pizza\_name: This column contains the name assigned to each pizza, providing a user-friendly reference to distinguish between different pizza offerings.

The dataset provides a comprehensive overview of pizza sales, allowing for the analysis of key indicators such as total revenue, average order value, total pizzas sold, total orders, and average pizzas per order. The order\_details\_id column serves as a unique identifier for each order detail.

**The following is the dataset that was used for analysis:**

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

**The number of columns and rows:**

A total of 12 features or columns are included in the 48,620 rows of data points (each indicating a unique order) that make up the dataset that records a restaurant's pizza sales.

|  |  |
| --- | --- |
| **Column** | **Data Type** |
| pizza\_id | Nominal |
| order\_id | Nominal |
| pizza\_name\_id | Categorical |
| quantity | Ratio |
| order\_date | Interval |
| order\_time | Interval |
| unit\_price | Ratio |
| total\_price  pizza\_size | Ratio  Ordinal |
| pizza\_category | Nominal |
| pizza\_ingredients | Nominal |
| pizza\_name | Nominal |

**Explanation:**

**Categorical:** Indicates groups or classifications without a set hierarchy.

**Ordinal:** Indicates that a category has a significant rating or order.

**Interval:** Denotes numerical values without a genuine zero point, but where the difference between two values is significant.

**Ratio:** Denotes numerical values with a true zero point and substantial differences between two values.

|  |  |  |
| --- | --- | --- |
| **Column** | **Variable\_Type** | **Domain** |
| pizza\_id | Integer | 1 to 48620 |
| order\_id | Integer | 1. to 22350 |
| pizza\_name\_id | String | - |
| quantity | Integer | 1 to 2 |
| order\_date | Date | 01/01/2015-  12/31/2015  (MM/DD/YYYY) |
| order\_time | Time | 11:00:00 to 23:30:00 (HH:MM:SS) |
| unit\_price | Float | 9.00$ to 37.00$ |
| total\_price  pizza\_size | Float  String | 9.00$ to Unlimited  - |
| pizza\_category | String | - |
| pizza\_ingredients | String | - |
| pizza\_name | String | - |

**SECTION 2: PROSPECTIVE DASHBOARD USERS**

**Section 2: Prospective Dashboard Users:**

* **Marketing Teams:** Marketing teams leverage the pizza sales dashboard to understand customer preferences and behavior, enabling the creation of targeted marketing campaigns. By identifying popular pizzas among different customer segments, recognizing seasonal trends in sales, and analyzing regional preferences for toppings, marketing managers can tailor campaigns to specific demographics, adjust promotions based on seasonal patterns, and launch region-specific promotions to capitalize on local tastes. This data-driven approach enhances the effectiveness of marketing strategies, ensuring resonance with customers and maximizing promotional impact.
* **Product Development Teams:** Product development teams utilize the sales dashboard to inform their processes and enhance existing offerings. By identifying emerging trends in pizza types, recognizing demand for new toppings, and evaluating the performance of recently introduced pizzas, product developers can stay ahead of market preferences. This data-driven approach enables the creation of new pizzas based on trending types or toppings, modification of existing products to meet changing customer preferences, and the removal or adjustment of pizzas that are not performing well in the market. The dashboard serves as a valuable tool for optimizing product portfolios and ensuring they align with evolving consumer tastes.
* **Customer Service Teams:** Customer service teams turn to the dashboard to enhance the overall customer experience by addressing issues identified in sales data. Identifying areas with high wait times or frequent delivery delays allows them to optimize delivery routes, allocate additional resources, and implement improvements to reduce common customer complaints. The data-driven insights empower customer service managers to proactively address pain points, leading to improved customer satisfaction and loyalty. Real-time adjustments based on the dashboard data contribute to a more efficient and customer-centric service model.
* **Stakeholders:** Various stakeholders in the pizza industry, including pizza chains, independent pizzerias, and pizza delivery companies, derive significant benefits from the insights provided by the dashboard. For pizza chains, the data serves as a valuable tool for optimizing menu offerings across different locations, enabling them to standardize or diversify based on nationwide trends. Independent pizzerias leverage the dashboard to tailor their offerings to local tastes, differentiating themselves by providing unique or niche pizzas that resonate with specific customer preferences. Pizza delivery companies, on the other hand, use the dashboard to enhance logistics and delivery efficiency. By gaining insights into order volume, delivery times, and customer satisfaction metrics, these companies can streamline operations for an overall improved service experience. The dashboard becomes a central resource for stakeholders to make informed decisions, differentiate their offerings, and enhance operational efficiency in a dynamic and competitive pizza industry.
* **Pizza Restaurant Owners and Managers:** Pizza restaurant owners and managers leverage the dashboard to optimize sales, identify popular items, and enhance overall operational efficiency. This involves analysing data to pinpoint the best-selling and least-selling pizzas, adjusting menu offerings based on sales trends, and optimizing inventory management to reduce waste. The application of these insights includes introducing promotions for popular pizzas to boost sales, streamlining the menu by removing or revamping unpopular items, and adjusting staffing levels based on peak sales times. This data-driven approach empowers owners and managers to make strategic decisions that positively impact the restaurant's performance and customer satisfaction.
* **Pizza Franchisees:** For pizza franchisees, the dashboard serves the purpose of comparing performance, identifying improvement areas, and ensuring alignment with the overall franchise system. Examples of this include comparing sales performance with other franchisees in the region, identifying areas of improvement based on regional preferences, and ensuring adherence to franchise-wide standards. The application of these insights involves implementing best practices from high-performing franchisees, tailoring offerings to local preferences within the framework of the franchise, and streamlining operations based on insights from top-performing locations. The dashboard becomes an essential tool for franchisees to optimize their individual operations while contributing to the overall success of the franchise system.
* **Pizza Delivery Companies:** Pizza delivery companies utilize the dashboard to optimize delivery operations, enhance customer satisfaction, and manage order volume effectively. This includes tracking order volume by neighbourhood and time of day, optimizing delivery routes to reduce delivery times, and monitoring customer satisfaction metrics. The application of these insights involves adjusting staffing levels and delivery routes based on demand, implementing promotions or incentives to improve customer satisfaction, and identifying and addressing issues affecting delivery times. By leveraging the dashboard, delivery companies can streamline their operations, improve efficiency, and provide a better overall service experience to customers.
* **Pizza Ingredient Suppliers:** For pizza ingredient suppliers, the dashboard's purpose is to track demand for ingredients, identify market trends, and optimize production and inventory levels. Examples include identifying which toppings and cheeses are in high demand, adjusting production levels based on ingredient popularity, and managing inventory efficiently to meet demand. The application of these insights involves anticipating and responding to changes in ingredient demand, collaborating with pizza restaurants to develop new products based on trends, and optimizing supply chain management based on sales data. The dashboard becomes a valuable resource for ingredient suppliers to stay responsive to market needs and collaborate effectively with pizza businesses.
* **Investors:** Investors utilize the pizza sales dashboard to make informed investment decisions and assess the financial health of pizza-related businesses. Examples of this include evaluating the overall sales growth and financial performance of pizza restaurants or franchises, assessing the popularity and market share of specific pizza brands, and monitoring trends in customer preferences and operational efficiency. The application of these insights involves identifying high-performing pizza businesses for potential investment, gauging the financial stability and growth potential of pizza-related ventures, and using data to inform investment strategies and portfolio decisions. By leveraging the dashboard, investors gain valuable insights that contribute to their ability to make sound investment choices within the dynamic and competitive pizza industry.

**SECTION 3: USER REQUIREMENTS & POTENTIAL QUESTIONS**

**User Requirements:**

1. The system should feature total revenue tracking with customizable date ranges.
2. Users should have the capability to observe the hourly fluctuations in pizza sales, showcasing the total number of pizzas sold.
3. The system screen shows the top five pizzas ranked by total orders.
4. The system displays the proportion of sales attributed to each pizza size as a percentage.
5. Users should be able to identify and view the top 5 pizzas based on revenue, with options for different time periods.
6. Users should be able to identify and view the bottom 5 pizzas based on revenue, with options for different time periods.
7. Users require the system to compute pizza sales, considering the influence of both pizza categories and variations in time.
8. The system should identify and display the top 5 pizzas based on the total quantity sold, with options for different time periods.
9. Users should be able to identify and view the bottom 5 pizzas based on the total quantity sold, with options for different time periods.
10. The system should provide a graphic representation of weekly trends in the number of orders.
11. The system should calculate and display the percentage of sales attributed to each pizza category, with options for different time periods.
12. The system should track and display the number of orders and pizzas sold for each pizza category, with options for different time periods.

**Potential Questions:**

1. What was the total revenue generated during the specified period?
2. What pizza sales fluctuate on an hourly basis for the total pizza sold?
3. Which pizzas rank highest in terms of total orders, listing the top five?
4. What percentage of sales is attributed to pizza size?
5. What are the top 5 pizzas by revenue?
6. What are the bottom 5 pizzas by revenue?
7. How are pizza sales influenced by both pizza category and time variations?
8. What are the top 5 pizzas by total pizzas sold?
9. What are the bottom 5 pizzas by total pizzas sold?
10. What is the weekly trend for the number of orders?
11. What percentage of sales is attributed to each pizza category?
12. How many orders and pizzas were sold by each pizza category?

**SECTION 4: REFERENCE LINKS**

**Dataset link:**

*🍕🍽️ Pizza Restaurant Sales*. (2022, October 21). Kaggle. <https://www.kaggle.com/datasets/shilongzhuang/pizza-sales>

**Mural link:**

<https://app.mural.co/invitation/mural/phase14757/1699563089525?sender=u1a6332ed6ddde045bbc37154&key=c1965fb8-d49b-4a7f-9e4a-0adbe368ba37>