

**Department of Computer Engineering**

**Course: DWMM**

**Mini-Project - Phase 1 Report**

**Guidance By - Kumavat Mam**

**Topic: Dairy Management System**

**By**

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**Data Gathering Information:**

Data gathering for a Dairy Management System can be sourced from various channels, including:

1. **Primary Sources:** In this context, primary sources refer to data collected directly from the dairy-related processes. This may encompass data obtained through on-site observations, interviews with dairy farmers or workers, surveys involving customers and suppliers, and experimental data gathered during dairy product development or quality control measures.
2. **Secondary Sources:** Secondary sources in a Dairy Management System encompass data that has been previously collected and is relevant to dairy operations. This includes information from existing databases within the system, research papers related to dairy industry practices, government reports on dairy regulations and standards, and historical records that detail past production and sales data for dairy products.
3. **Public Data:** Public data in a dairy management context comprises information that is openly available on the internet. This includes open datasets containing agricultural and dairy-related statistics, data from relevant websites and industry publications, as well as social media channels that may provide insights into customer preferences and feedback related to dairy products and services.

Gathering and utilizing data from these sources can play a crucial role in optimizing dairy production, supply chain management, and customer satisfaction within a Dairy Management System.

**Sample of tables:**

1. **Dairysalesfact Table:**



1. **Coustomer Dimension Table:**
2. **Product Category Table:**



**4. supplier\_dim Table:**



**Objectives:**

**Research Objectives:**

**1. To Optimize Dairy Production:** This involves exploring specific research questions related to dairy production efficiency, testing theories or models to enhance milk and dairy product yields, and identifying trends or patterns in data that can lead to more efficient production processes.

**2. To Ensure Quality Control:** Research objectives include testing hypotheses related to quality control measures, ensuring the consistency and safety of dairy products, and generating new knowledge and insights into maintaining product quality.

**3. To Enhance Dairy Product Development:** This objective is to explore and analyze customer preferences and behaviors to create new dairy products, identify market trends and competitors, and improve decision-making in the development and marketing of dairy items.

**4. To Enhance Dairy Distribution and Supply Chain:** Research aims to assess the performance of dairy products and services, identifying areas for improvement, and optimizing the supply chain to meet customer demands efficiently.

**Business Objectives:**

**1. To Meet Customer Preferences and Behaviors:** The primary business objective is to understand customer preferences and behaviors related to dairy products. This involves analyzing market trends, assessing customer feedback, and adjusting product offerings accordingly.

**2. To Stay Competitive:** Business goals include analyzing market trends and the activities of competitors in the dairy industry to ensure that the dairy management system remains competitive. This includes gathering insights to adjust pricing, product development, and marketing strategies.

**3. To Improve Decision-Making:** To make data-driven decisions in various aspects of the dairy business, including production, marketing, and supply chain management, and to facilitate strategic planning based on accurate and up-to-date information.

**4. To Ensure Product Quality and Safety:** Business objectives include assessing the performance of dairy products to maintain high quality and safety standards. This is vital for customer satisfaction and regulatory compliance.

By aligning research and business objectives within the Dairy Management System, organizations can efficiently manage dairy production, distribution, and customer satisfaction while remaining competitive and agile in the dairy industry.

**Project Description:**

In our Dairy Management System, we have designed a comprehensive database structure to facilitate data analysis and decision-making. The primary components of the database include:

**1. Dairy Sales Fact Table (Sales\_Fact):**

- The central fact table capturing all sales transactions.

- It includes foreign keys to connect to dimension tables: Customer\_Dim, Product\_Dim, Time\_Dim, and Location\_Dim.

- Key attributes in this table are Sales\_ID, Product\_ID, Customer\_ID, Sales\_Amount, Sales\_Date, Time\_ID, and Category\_ID, enabling in-depth sales analysis.

**2. Product Category Dimension Table (Product\_Category\_Dim):**

- This dimension table stores product category information.

- Key attributes include Category\_ID and Category\_Name.

- It helps categorize and analyze dairy products, aiding in sales and inventory analysis.

3. **Customer Dimension Table (Customer\_Dim):**

- A dimension table holding customer information.

- Key attributes include Customer\_ID, Customer\_Name, Customer\_Location, Customer\_Email, and Customer\_Phone.

- This table supports customer-centric analysis, allowing us to understand customer behavior and preferences.

**4. Product Dimension Table (Product\_Dim):**

- A dimension table storing product details.

- Key attributes include Product\_ID, Product\_Name, Product\_Category, and Product\_Price.

- This table is vital for product-related analysis, helping us track product performance, pricing, and category trends.

**5. Time Dimension Table (Time\_Dim):**

- A dimension table capturing date and time information.

- Key attributes include Date\_ID, Year, Month, and Day.

- This table is crucial for time-based analysis, including time series, trends, and seasonality in dairy sales data.

This structured database design allows for comprehensive data analysis, including sales trends, customer insights, and product performance evaluation within the dairy management system. The Sales Fact Table serves as the central repository for sales transaction data, while the dimension tables provide contextual information for analysis and reporting.

**Outcome:**

Outcomes of our Dairy Management System Database Implementation:

**1. Data Centralization:**

- The collected data has been centralized within the structured tables, facilitating easy access and management. This centralization simplifies data administration and reduces data fragmentation.

**2. Data Integration:**

- Data from various sources has been effectively integrated into a unified database. This integration provides a holistic view of sales and related information, allowing for a comprehensive understanding of the dairy management system's performance.

**3. Efficient Data Retrieval:**

- The star schema structure, with the central Sales\_Fact table connected to dimension tables, significantly enhances data retrieval efficiency. This design minimizes query response times, ensuring that users can obtain relevant information quickly.

**4. Historical Data Retention:**

- The tables are equipped to retain historical data, enabling trend analysis and compliance reporting. Historical records empower users to track changes and identify trends over time, supporting informed decision-making and regulatory compliance.

**5. Scalability:**

- The data infrastructure has been designed with scalability in mind. It can accommodate growing data volumes and increasing business needs. This ensures that the dairy management system can adapt and continue to deliver value as data requirements expand.

By achieving these outcomes, our Dairy Management System is well-equipped to centralize, integrate, and efficiently manage data while retaining historical records for meaningful analysis and accommodating future growth. This structured approach enhances the system's effectiveness in supporting dairy operations and decision-making.