VISHWAKARMA UNIVERSITY

Maximising Human Potential

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:

SalesTrans	DateKey	ProductKe	CustomerI	StoreKey	QuantitySo	SalesAmou	Profit
1	########	101	201	301	10	50	15
2	########	102	202	302	5	25	8
3	########	103	203	301	8	40	12
4	########	101	204	303	12	60	18
5	########	104	205	302	6	30	9
6	########	105	206	301	15	75	22.5
7	########	106	207	303	9	45	13.5
8	########	107	208	302	7	35	10.5
9	########	101	209	303	11	55	16.5
10	########	102	210	301	4	20	6
11	########	104	211	302	9	45	13.5
12	########	105	212	303	6	30	9
13	########	103	213	301	13	65	19.5
14	########	107	214	302	8	40	12
15	########	102	215	301	5	25	7.5
16	########	103	216	303	10	50	15
17	########	104	217	302	12	60	18
18	########	106	228	301	12	60	18
19	########	101	229	302	8	40	12
20	########	103	230	303	11	55	16.5
21	########	104	231	301	14	70	21
22	########	102	232	302	7	35	10.5
23	########	107	233	303	9	45	13.5
24	########	101	234	301	6	30	9
25	########	106	235	302	10	50	15
26	########	105	236	303	12	60	18
27	########	102	237	301	8	40	12

2. Coustomer Dimension Table:

CustomerI	CustomerI	CustomerI	CustomerI	Customer/	CustomerC	CustomerS	CustomerI	CustomerC
201	Shraddha	shradha@	1.23E+09	123 Main S	Pune	Maharash	12345	India
202	Shahajirac	shahajirac	9.88E+09	456 Elm St	Pune	Maharash	54321	India
203	Sahil Bunt	sahil@gm	1.12E+09	789 Oak St	Pune	Maharash	67890	India
204	Pratik Sika	pratik@gn	5.56E+09	101 Pine S	Pune	Maharash	10101	India
205	Aryan Ran	aryan@gn	1.23E+09	555 Cedar	Pune	Maharash	54321	India
206	Satyajit Su	satyajit@g	9.88E+09	777 Birch S	Pune	Maharash	98765	India
207	Atharva Cl	atharva@	1.11E+09	888 Maple	Pune	Maharash	12345	India
208	Om Boma	om@gmai	4.45E+09	999 Walnu	Pune	Maharash	33333	India
209	Prerana Ra	prerana@	7.78E+09	111 Apple	Pune	Maharash	77777	India
210	Prathames	prathames	3.33E+09	222 Peach	Pune	Maharash	22222	India
211	Aliasgar Sh	aliasgar@	5.55E+09	333 Grape	Pune	Maharash	99999	India
212	Ayush San	ayush@gn	2.23E+09	444 Lemor	Pune	Maharash	55555	India
213	Soham Sha	soham@g	1E+10	777 Cherry	Pune	Maharash	77777	India
214	Mohamm	anas@gm	1.11E+09	999 Plum S	Pune	Maharash	11111	India
215	Mayuri Na	mayuri@g	4.45E+09	222 Berry	Pune	Maharash	22222	India
216	Abhishek (	abhishek@	1.23E+09	123 Elm St	Pune	Maharash	12345	India
217	Sakshi Sha	sakshi@gn	9.88E+09	456 Oak St	Pune	Maharash	54321	India
218	Gauri Sanc	gauri@gm	1.12E+09	789 Maple	Pune	Maharash	67890	India
219	Atharva Sa	atharva@	5.56E+09	101 Cherry	Pune	Maharash	10101	India
220	Nidhi Nare	nidhi@gm	1.23E+09	555 Grape	Pune	Maharash	54321	India

3. Product Category Table:

CategoryID	CategoryN	Descriptio	ParentCat	CreatedDa	LastUpdat	IsActive	TaxRate	MinStockL	MaxStockl	ReorderPc	SupplierID	AverageCo	Manufactu	WarrantyP	CreatedBy
1	Dairy Proc	Includes v	NULL	########	########	1	8.5	50	500	20	101	3.5	DairyCo	12	201
2	Bakery Ite	Various ba	NULL	########	########	1	7.5	30	300	15	102	2.75	BakeMast	6	202
3	Canned Fo	Canned ve	NULL	########	########	1	6	20	250	10	103	2	CannedGo	0	203
4	Frozen De	Ice creams	NULL	########	########	1	5	25	250	12	104	4.25	Chill Deligl	6	204
5	Deli Meats	Assorted c	NULL	########	########	1	7	40	400	20	105	5	MeatMast	0	205
6	Dairy Alte	Non-dairy	NULL	########	########	1	6.5	35	350	18	101	3.75	AlmondFr	8	201
7	Condimen	Sauces, sp	NULL	########	########	1	6	30	300	15	102	4	Savory Fla	0	202
8	Beverages	Drinks and	NULL	########	########	1	7.5	45	450	22	103	3.25	DrinkWav	6	203
9	Produce	Fresh fruit	NULL	########	########	1	8	60	600	25	104	2.5	GreenHar	0	204
10	Grains and	Cereals, ri	NULL	########	########	1	6.5	40	400	18	105	3	GoldenGra	12	205
11	Frozen Ve	Various fr	NULL	########	########	1	4.5	20	200	10	101	2	FreezeFre	0	201
12	Snacks	Snack foo	NULL	########	########	1	6	35	350	17	102	2.75	CrunchBit	0	202
13	Meat	Various cu	NULL	########	########	1	8	50	500	20	103	5.5	Meatopia	0	203
14	Seafood	Fresh and	NULL	########	########	1	6.5	40	400	19	104	4.75	SeaFresh	0	204
15	Household	Cleaning a	NULL	########	########	1	0	10	100	5	105	1	HomeCare	0	205

4. supplier_dim Table:

Supplier_I	Supplier_N	Contact_P	Phone_Nu	Email	Address	City	State	Zip_Code	Joining_Da
1	Milk Farm	John Doe	123-456-7	john@mill	123 Main	Anytown	CA	12345	########
2	Dairy Delig	Jane Smith	987-654-3	jane@dair	456 Elm R	Smallville	NY	54321	########
3	Creamy Da	Michael Jo	555-123-7	michael@	789 Oak A	Big City	TX	78901	########
4	MooMoo	Sara Davis	333-888-2	sara@moo	101 Dairy	Farmville	WI	12345	########
5	DairyFresh	Robert Wi	111-222-3	robert@d	222 Cow V	Ruralville	OK	45678	########
6	Milk Have	Emily Whi	444-555-9	emily@mi	888 Pastu	Pasturevill	MT	98765	########
7	DairyDrea	James Gre	777-666-4	james@da	555 Barn S	Barnville	AZ	78900	########
8	Farm Fres	Sophia Lee	222-999-7	sophia@fa	777 Cow B	Dairytown	NC	54321	########
9	Creamlanc	Daniel Tay	888-555-2	daniel@cr	222 Cream	Dairyville	GA	12345	########
10	Dairy Delic	Olivia Mar	999-888-7	olivia@da	555 Milk S	Milkville	OR	45678	########
11	FreshMilk	William Jo	666-111-3	william@f	789 Pastu	Pastureto	WA	78901	########
12	MilkMaste	Ava Wilso	444-111-6	ava@milk	123 Dairy	Cowlane	ID	98765	########
13	DairyWon	Liam Brow	777-444-8	liam@dair	456 Cow R	Cowville	NH	54321	########
14	MilkMagic	Ella Miller	333-222-7	ella@milk	101 Farm	Farmville	IN	12345	########
15	CreamyDe	Noah Davi	888-666-5	noah@cre	555 Dairy	Dairytown	IA	98765	########
16	DairyWorl	Lily White	555-333-2	lily@dairy	999 Cow A	Cowlane	LA	78900	########
17	MooMaste	Oliver Gre	111-444-6	oliver@m	777 Dairy	Milkville	PA	45678	########
18	FreshMilk	Sophia Tay	222-777-8	sophia@fr	123 Milk R	Milkland	WI	12345	########
19	DairyHarm	Ethan Wils	444-999-6	ethan@da	456 Farm	Farmertov	OR	54321	########
20	CreamyCo	Ava Martin	666-444-1	ava@crea	888 Cream	Creamervi	TX	78901	########

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.