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## DAIRY ADMINISTRATION SYSTEM: IMPACT ON DAIRY FARM BUSINESS

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**Abstract:** With the buoyancy in Indian economy, it gives a money-making platform to entrepreneurs to participate in Indian Dairy Sector for new business venture. Dairying in India is not only unique but also difficult to encompass which ensures the designing of proper administration system. 'DMS or Dairy Administration System' is an application all about proper data management at milk stations and automate the complete operation of Dairy Distribution Cooperative Societies mainly as a support system in rural area. Milking System has potential to achieve maximal profit with minimal resources which needs to be followed by dairy management and operational control. The DAS supports easy handling of manual procedures, models for analysis, and database. As compare to past decades, dairy farmers view digital transactions, supply report analysis and information management as important to their business. The study aimed at digital information management system which is an operative way to boost the extent of Quality Management in dairy business. Thus, the system is profitably designed to catch on dairy farmer's attention and positive implication on Dairy businesses in India.

**Keywords—**Dairy Management System (DMS), Automatic Milking System, Dairy Business

### INTRODUCTION

India has a population of over 300 million bovines as per 2019 livestock census, producing over 187 million tonnes of milk. India is first among all countries in both production and consumption of milk. Rejuvenation of dairy industry became a priority with the commencement of India's first five-year plan in 1951 [1]. The government's goal is to provide hygienic milk to country's growing urban population as well as employment or business exposure to mainly rural area, small dairy owners, suppliers, retailers etc.

In spite of having large milk consumption, India lacks to draw a good production cost. According to Dr. N.G. Hegde of BAIF Development Research Foundation, Indian Dairy Industry has slackened the low-cost production benefit. The main reason is due to average milk yield of Indian cattle is much less i.e., 987kg/year compare to 6273kg/year in Denmark, 5289kg/year in France, 5938kg/year in Canada [6]. So, farmers of others countries have to spend much less time as compare to India. The reason behind the high yielding is proper feed, water management, housing and digitalization, which is providing the dairy industry with new ways to optimize the entire value chain. Based on extensive systems and solutions designed especially for dairy industry, both process and discrete workflows can be optimally coordinated. This lower cost while maximizing quality and increasing flexibility. It has been a favorite pastime to predict that on-farm access to computers will play an increasingly important role in farm business management. The hardware necessary to allow such access is now available, and there is an extensive variety of relatively inexpensive equipment from which to choose a finest configuration. Inquiries from producers who already have or are considering acquiring computer equipment are becoming more numerous. There seems little doubt that a major effort in the future will be directed to developing software to use this potential to full advantage.

### *Influence of Pre-Production Afimilk System*

Integration of milking robotics into the dairy farms frees farmer from labor of milking and with add-on tools and adjusted management methods leads to automatic production system. One of known example is Afimilk system founded in 1977, Vietnam, HQ in Israel [7]. Afimilk is a leader in developing and marketing advanced computerized system for modern dairy farm.

Afimilk provides five services in single sensor i.e., precise heat detection, accurate animal id in parlors, timely calving alerts, sensitive lame less detection and well-being monitoring. These vast technology growth and automation instigation plays crucial function in Vietnam Dairy Industry.

Growing forward to digitalization Stellapps is One-stop dairy supply chain digitisation via IOT in India. It provide cattle monitoring (moon), milk procurement (smartAMCU), cold chain management (ConTrak). After consummating and providing a solution to pre-production problem up to a level, there comes a need of post milk and product management system.

### *Post-Production Management (DMS)*

Dairy Industry needs to collaborate technology as a whole. It needs a knowledge-based systems that can detect and diagnose diseases such as mastitis, production modules to prevent and reduce losses from diseases and managerial deficiencies and financial module to detect suboptimal financial results and handle management sector of dairy or dairy farm. This application is all about to help out dairy sector as a grown up in IT.

The aim to develop this application is the urgent need for dairy business to establish sound and secure information management system to improve level of information collection, automate manual daily cards and registers maintenance, double confirmations and digitalize the payment modes. The aim is to increase rural participation in Dairy Industry.

## **Working of Dairy Administration System**

The intent of the application **DMS or Dairy Administration System** is to create connections between the dairy owner who can effortlessly manage the entire dairy business, the staff of dairy smoothly maintaining the daily records of milk of their consumers and the customers who can efficiently order and buy milk and other dairy products without involving themselves in any sort of manual work. The DMS or Dairy Administration System can execute all the functionalities that are necessitating in a dairy. It is a beautifully designed and developed solution for Dairy owners to manage all their business processes from a single application. This is a subscription-based service developed with the purpose of helping the dairy owners mitigate their losses and increase their productivity. With the addition of all the important features, the most comprehensive, flexible, dairy farm business-friendly management system helps in automating the production of dairy farms.

The system is developed to help out rural society, with Java as our foundation language with JSP/Servlet to handle backend steadily. As system deals with handling large databases of different actors MYSQL server is taken into consideration with a easy to use, eye-catchy User Interface.

### **A. Implementation**

The application is comprised of two modules; The Admin and The Customer. Each module has a separate login system asking for the registered E-mail address and the password to get access to their accounts. In case of any new user the system provides the Sign-up page to get their details record and create the user's account.

The comprehensive functionalities of each module are described below:

#### **The Admin Panel**

The Admin is the owner of the dairy who supervise the following work:

- Admin add or update the prices and the quantity of the dairy products available in the dairy on any particular day.
- The Admin manages **The Staff** of the dairy. Furthermore, the staffs maintain the register of the daily milk record and money paid by the customers registered with the dairy.
- Admin provides the confirmation to the order placed by the customers through verifying the details received through the SMS notification.

#### **The Customer Panel**

The customer or the buyers can perform the following operations:

- The customers log in to the system and can place or update the orders.
- The customers can get through the details of the daily milk reports and the bills of the orders placed by them.
- After getting the confirmation of the order by the owner of the dairy, customers can pay the ordered products bill through the Paytm payment gateway incorporated with the system.

### **Additional Features**

1. Payment Gateway Integration: - The Admin of the dairy approves the order placed by the customer; correspondingly the customer can pay the bill for the order through the payment gateway integrated with the system. The **DMS or Dairy Administration System** use Paytm payment API; **Paytm Payment Gateway** provides a secure, PCI-compliant way to accept payments on both website and App through different sources of payment.

2. SMS Gateway Integration: -Instantly after the order placed by customer is approved by Admin, the SMS Gateway is used to send text confirmation about order to customer, including quantity, price and all relevant details. Also, after the order is placed through customer panel, the Admin get text alert about order generation through customer and all relevant details so that he can approve or reject it conforming to availability. The **DMS** use **SMS Gateway** that includes

API key, sender Id, route and many attributes. This gateway is a comprehensive bulk SMS service platform that easily sends bulk SMS campaigns.

### B. Modelling of Dairy Administration System

In today's ongoing task in dairy division the farmers and dairy employees are driving a decisive force that is majorly accountable for viability of stations in the quarrelsome environment and for most part of it is based on quality services. DMS is designed to bring all transparencies in daily milk and milk product purchasing, selling and ease to manage the long term (weekly/monthly/yearly) records effectively and securely. We have model DMS as an object-oriented database model with use of UML's. The modeling of tracking process in dairy management can be done by using Unified Modeling Language.

**Use case Diagram:** A use case model is responsible to brief the functionalities and actors involved in any application. The major objective of this is to support development to envisage the practical requirement of system counting the association of "actors" to different use-cases.

The use-case diagram ahead shows the actors involved in system.

**Admin** who is responsible to handle login authentications, add/delete account of customer/supplier, salary/payment transactions, and order updating/confirmations and to handle the on-shop customers as well.

**Suppliers are the producers** who are responsible to supply milk at dairy and get respective payments and proper supply reports instead of daily card entry.

**Staffs** are responsible for delivery at customer end, maintaining daily supply registers of respective customers of their accounts.

**Customers** are the actual users and service gainers who can place order, get daily milk supply, get reports, pay online, get text assurance of their orders.

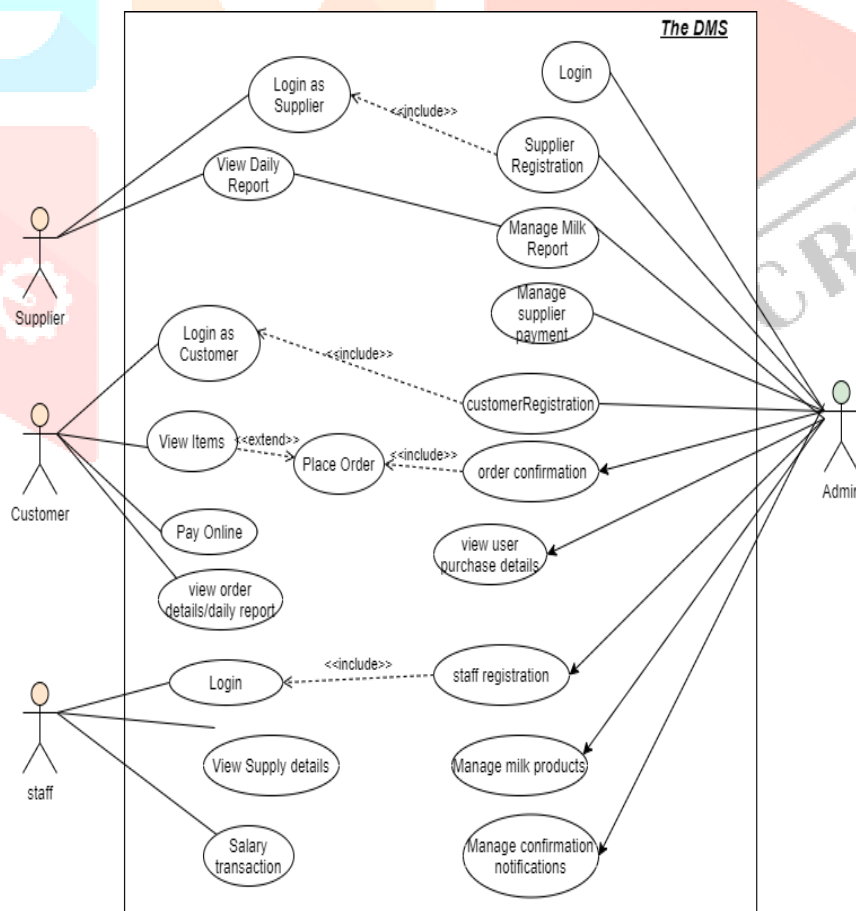


Fig 1 DMS Use Case Diagram

### III. Conclusion

Dairy is a strategic sector at the global scale [8]. It contributes to the improvement of many national and local economies, and has a very important social impact [9]. However, the agriculture industry is lagging in the adoption of IT and latest technology. One example of a dairy management system is AfiMilk System. AfiMilk is a leader in developing and marketing advanced computerized system for modern dairy farm. According to **the Study of India's Dairy Sector 2017**, India is the world's largest producer and consumer of dairy and there is always a tremendous growth in dairy industry which can bring white revolution in our country if this industry is properly organized. Thus, the application **Dairy Administration System or DMS** is built in such a way that it suits for all type of milk and dairy products distributions in future, increasing the overall profit of the business with minimal manual work.

The use of computerized system will improve the physical working environment considering the number of monotonous, repetitive tasks to be eliminated or minimize, increasing efficiency in production [10]. **Dairy Administration System or DMS** makes it unchallenging and secure to store all the data associated with the dairy farm directly into the database which makes the work efficient and flawless. The integration of the user-friendly payment gateway to pay the order bills makes the application more feasible and secure. In contrast to the former dairy business, the application **DAS** supports digital payment transactions, daily report inspection, reliable and easy selling and buying of products which in turn prove to be effective way in uplifting the Dairy farm business to a large extent.

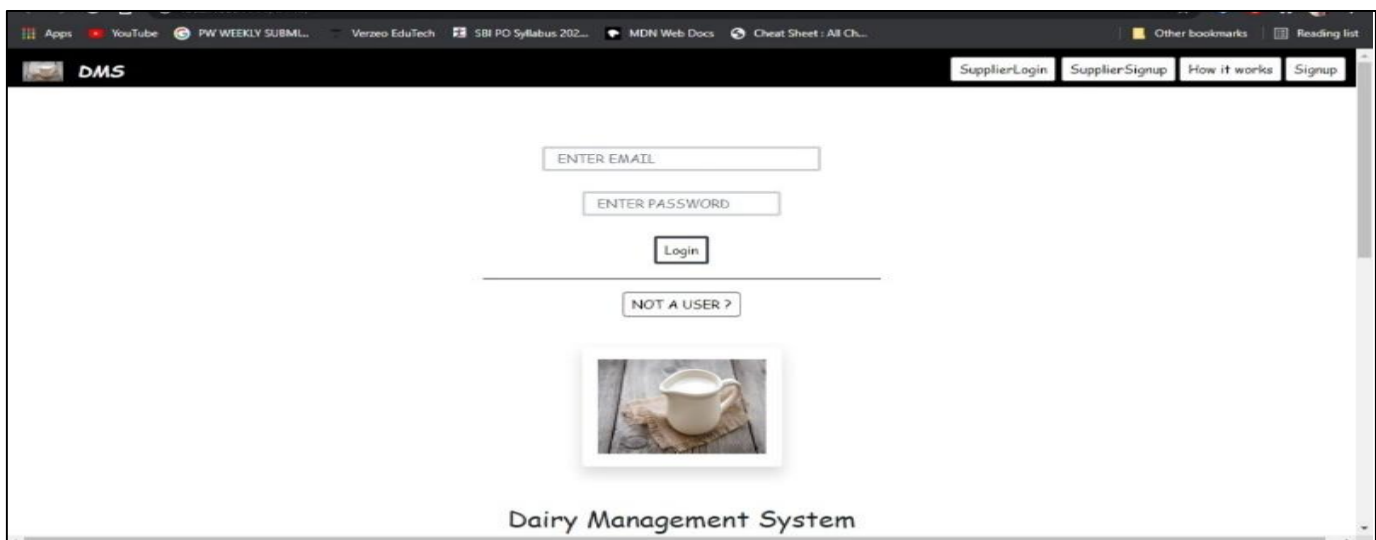


Fig2 Login Page of DMS



Fig3 Functions of DMS

DMS ADMIN LOGIN		Order Details					Logout
Email	Item ID	Item Name	Price	Quantity	Amount		
abc@gmail.com	2	curd	200	1	200	Done	
mansim@gmail.com	3	butter	420	1	420	Done	
nivi@gmail.com	6	Chakka	200	1	200	Done	
sakshiyad06@gmail.com	3	butter	420	3	1260	Done	

Fig4 Order Details of Customers

DMS CUSTOMER LOGIN		Bill			Logout
Order Details	Bill				
milk 49.0 per lit		Milk Liter	RATE PER LITER	AMOUNT	
Order		0.0	49.0		
		Last_Month Amount_Due		0Rs.	
		This_Month Amount		0Rs.	
		Total_Amount		0Rs.	
Detailed Bill					
0		Rs			Pay Bill

Fig5 Bill of a Customer

DMS ADMIN LOGIN															Logout
		Add column													
email	mobile	address	1march	2march	3march	4march	5march	6march	Milk lit total	Amount	Lastmonthdue	Moneypaid			
archana@gmail.com	9039450900	34 revenue nagar	0	2	0	0.01	2	0	0.0	0.0	97.1011	0.0		₹	x
lakshya@gmail.com	9039450900	34 Revenue Nagar Indore	0	0	0	0	0	0	0.0	0.0	200.6	0.0		₹	x
mansim@gmail.com	8839361900	34 revenue nagar indore	0	0	0	0	0	0	0.0	600.0	178.4	778.0		₹	x
pushpa@gmail.com	9977712490	Revenue Nagar Annapurna Road	0	0	0	0	0	0	0.0	0.0	4609.2	0.0		₹	x
abc@gmail.com	manish	indore	0	0	0	0	0	0	0.0	0.0	0.0	0.0		₹	x
sakshiyad06@gmail.com	9589527112	indore	0	0	0	0	0	0	0.0	0.0	0.0	0.0		₹	x
USER DETAIL :- kamal@gmail.com Kamal Bagana 9826807700															

Fig6 Daily Milk Report/\_Register



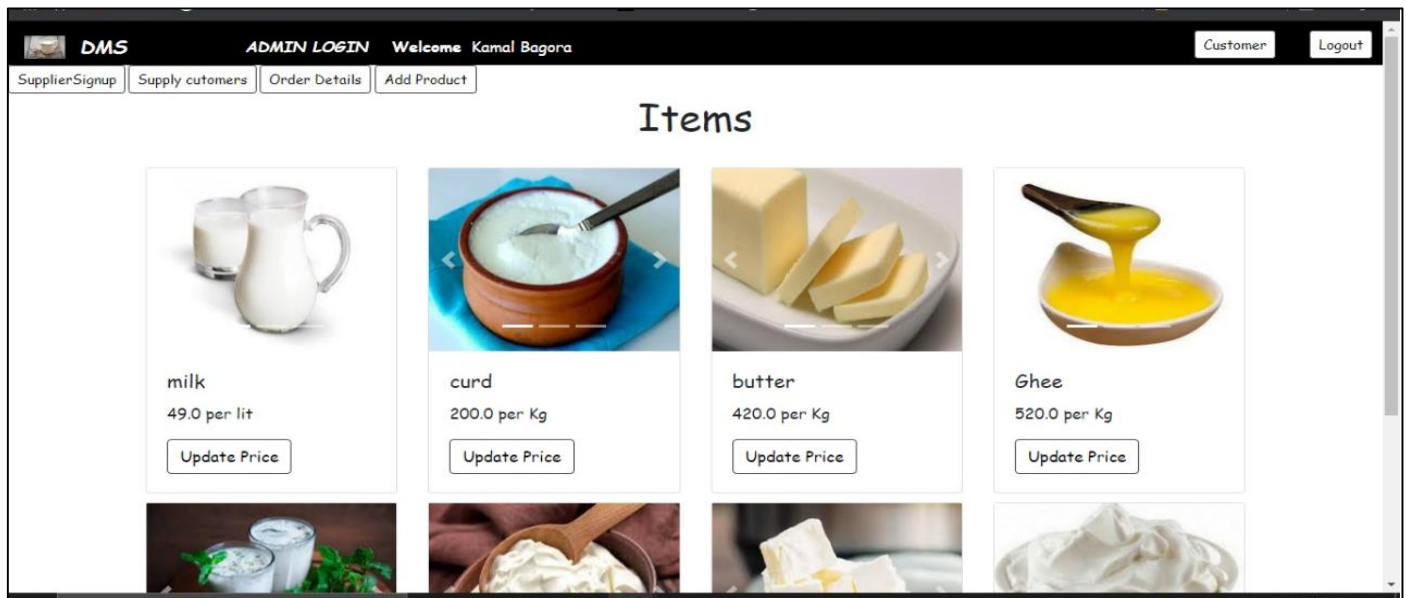


Fig7 Admin Dashboard

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