

# Review on Smart Dairy ERP System Based on Android Application

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## ABSTRACT

Dairy is one of the biggest agribusinesses in India and a significant contributor to Indian economy. It operates round the year to deliver milk and other dairy products to every human being. It is one of the industries that still relies heavily on regional supplies, mostly from the rural areas. In regards to the dairy industry, Indian markets with the greatest growth potential are also among the least developed in infrastructure and consumer awareness. Though large scale dairies like Gokul have automated and latest technology at their disposal, the small scale and mid-scale dairies are still intimidated by the use of technology mostly because of the cost and complexity of the IT systems. Hence, making the process much more labouring, inefficient and error prone. Dairy production faces multiple challenges, most of these challenges are related to the supply chain, at the level of dairy farms and milk collection. One of the most common and alarming challenges is deception of farmers by the upper management in the dairies. The dairy farmers suffer from financial loss as they are often deceived by collection center owners into paying higher commissions and the dairy administrators are unaware of it. So in order to earn a profit, dairy farmers turn to options like adulteration of milk which declines the milk quality. This can be avoided by having an integrated system. An ERP system will ensure that the farmers will get paid fair prices, the collection center owners get their commission accordingly and the dairy administrator can manage all this with ease. This will make the dairy industry more reliable and profitable.

**KEYWORDS:** farmer; financial statement; milk Collector

## I. INTRODUCTION

In the existing system, most of the work is done manually and using traditional methods like book-keeping. Small scale and mid-scale dairy industries either use outdated systems or they do not use one at all. Lack of communication and knowledge among the management is also a problem and as the industry grows, this problem only becomes more intense. Another problem is that most of the systems are not centralized and do not provide financial transparency among the entities. Using an integrated system will eliminate almost all the manual work making the process easy and effortless. It will optimize the process and make the system centralized, secure and efficient. The Smart Dairy ERP system will not only be used by the Dairy administrators and employees but also by the farmers and milk collectors that supply milk to the dairies. Having an integrated system in any industry is a must and Smart Dairy ERP system will automate most of the process, reducing the labour, give more control to the administrators and most importantly provide financial transparency among farmers, milk collectors and administrators.

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Smart Dairy ERP System is designed for farmers, collection centers, and milk processing units (dairies). This ERP software ensures efficient collaboration between farmers, collection center owners, and administrators, thus giving a sustainable competitive advantage. The main purpose of the Smart Dairy ERP Project is to facilitate communication between farmers / local milk sellers and the milk factory. This software will help the administrators to register all the suppliers, buyer details, sales details, etc. It will also allow the farmers and milk collection center owners to track their day-to-day transactions. It is an integrated system that provides relevant information across the Dairy thus resulting in better management and transparency. The Smart Dairy ERP system supports the optimization of processes like procurement including milk entry and milk payment statement, transparent traceability across all value-adding stages – from farmer to administrator, automation and centralized control.

## II. LITERATURE REVIEW

**“ICT Benefit Realization for Dairy Farm Management: Challenges and Future Direction”, Tawa Khampachua and Nawaporn Wisitpongphan[1]** In this paper they propose a benefit realization framework called Operation of Realizing Benefit in Information Technology (ORBIT). Since the framework focuses more on the users rather than the ICT system, it identifies key milestones, activities, and stakeholders that should get involved in each of the 4 phases in the ICT project life cycle, which includes planning, realization, exploration, and evaluation

**“Automatic Quality Information Management System of Dairy Business”, Priyanka Donde, Priyanka Maule, Prof. S. H. Darekar[2]** In this paper they propose the international dairy market. With the current liberalization of India economy, it has opened a wide field for entrepreneurs from other countries to participate in development of Indian dairy industry. The dairy industry which is the second largest industry of India employs millions of persons in our country.

**“Dairy Digital Management Information System Development Based on SOA”, Hongqiang Li, Haibo Lu, Jiao Qu, Xiangling[3]** This paper describes the software of “dairy management information system”. The software based on JSP + Servlet + JavaBeans model developed for medium-sized dairy farms. The software is divided into herd management, milk production management, cattle breeding, statistics and analysis, a cattle ranch management, system management functions, and dairy cows can be a variety of technical data to analyze, synthesize, organize, is a practical, economic, and user-friendly information management system for dairy farm.

**“Design of Information System for Milking Dairy Cattle and Detection of Mastitis”, Ming-Chih Chen, Chien-Hsing Chen, and Chong-Yu Siang[4]** They propose the management of the health of dairy cows is critical for farmers. In particular, when a farmer performs milking, the health of the cow must be monitored accurately. If the cow has mastitis in one or more udders, its milk cannot be drunk. During milking, milk that is produced by the cows is extracted to the milk tank. If even one cow suffers from mastitis and the farmers fail to notice the problem, then all the milk in the milk tank must be drained off and the farmer must disinfect the tank

## III. PROBLEM STATEMENT

To develop a Dairy ERP system that optimizes business processes, facilitates and efficiently collects data, and provides transparency financial statements.

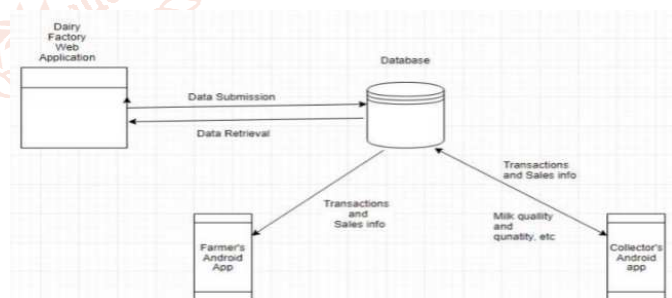
## IV. TOPIC INITIATIVES

### Objectives

1. To develop a web application to allow administrators to register sellers, and view sales details, financial statements, and other details.
2. To develop an android application for farmers to allow them to view their financial transactions.
3. Develop an android application for collection center owners to input milk details, calculate the cost of the milk and view financial statements.
4. To ensure transparency and efficient management of relevant information.

## V. OUTLINE OF PROPOSED WORK

The user of the proposed system requires that the developed system must be user-friendly, ensure security and centralized control to the administrator and produce results in a timely manner. The web application and the android applications are simple to understand and easy to use by the administrators or dairy staff and farmers respectively. The system must be designed in such a way that administrator has full access to all the functionalities and the farmers and milk collectors should be able to login into the apps securely to view their information and transactions which is visible to only them. The system must provide relevant, reliable and up-to-date information to the respective users.



**Fig1 Outline of the Smart Dairy ERP System**

Smart Dairy ERP System is designed for farmers, collection centers, and milk processing units (dairies). The main purpose of the Smart Dairy ERP Project is to facilitate communication between farmers / local milk sellers and the milk factory. The overall data is stored in the centralized database .

**1. Processing Unit (Dairy) Web Application:** The administrator (Dairy staff/operator) has overall access to the web application. The administrator logs in to

the web application using an id and password. Using the web application, administrators can perform all registrations. He has the authority to register farmers, collection center owners, other admins, and users. He can edit or delete the data of all the registered entities. For registering farmers, detailed information of farmers is required. The farmer information such as full name, address, mobile number, adhar card number, no. of cows/buffalo, and 7/12 Details, etc. Using this information a farmer will get successfully registered and he will be assigned a unique farmer id. Using this farmer id, he will be able to log in to the farmer android application. Collector is a collection center owner where farmers daily collect their milk for sale. For registering collectors, information is required like full name address, mobile number, etc. After successful registration, he will be assigned a unique collector id. The collector can login to the milk collection application using this collector id. The link collector\_farmer tab is used to link a farmer with the collection center where he can sell his milk. The Admin will be able to view all the sales and payments transactions, and also set the milk rate and commissions for the milk collector and farmers.

**2. Farmer Android App:** When a farmer gets registered, he will be allocated with a unique farmer id and password. Using these a farmer can log in to the farmer android application. When the farmer logs in to the application, a screen will appear which will provide two options, one for the profile and other for transaction details. The farmer can view his milk sales information such as milk's quantity, quality (Fat & SNF), and date/time of sale. The farmer can also view the financial transaction history through this application which will display the total amount to be paid and also the status of the payment i.e paid or unpaid.

**3. Milk Collection App:** The collection center manager (or milk collector) when gets registered, receives a unique Collector ID and password through which he can log in to the Collector's android application. When the collection center owner logs in to the application, a screen will appear which will provide two options, one for the profile and the other for the farmer's list. The farmer list contains the details of farmers who are linked under that collection center. When he selects a particular farmer, he is again provided with two options, add a new record and view previous records of that farmer. In the new record, the Collection Unit Manager will input the details like Fat percentage, SNF, amount of milk collected from the farmers which will be stored in the database. Accordingly, the cost of milk will be

calculated which will be visible to farmer, collector as well as the admin. In the view of the previous record, the date of milk collection, quantity, rate of milk, and payment status will be displayed.

## Testing and Results

### Test Case 1:

Name: User Login

Objective: To check whether only authorized users can access the web application and android application.

Input: The user puts his credentials (username and password) in the provided fields of the login screen and clicks the login button.

Output: If the user is authorized i.e. the credentials are present in the database he can securely log in or "Invalid Username or Password...!" message is displayed on the screen.

### Test Case 2:

Name: Farmer Registration and Collector Registration.

Objective: To check new user registration and check if the web app accepts duplicate registrations.

Input: The admin enters required details and presses the register button.

Output: If the farmer or collector is new, that is, if the details are not already present in the database then the user is registered otherwise an error with message "Data already exists with ROC ID/ Phone Number" is generated.

### Test Case Summary:

Sr. No.	Test Case	Objective	Result
1.	User Login	Wrong Username or password	Pass
2.	Farmer / Collector Registration.	Register user	Pass
3.	Android App Login Verification.	Access to authorized user only	Pass
4.	Milk Details Validations.	Input Validation	Pass

## VI. CONCLUSION AND FUTURE WORK

### CONCLUSION

The administrator can successfully register farmers and collectors, and edit/view their information and transactions using the web application. The milk collector can use the collector android app to enter the milk details from his mobile phone and also view his financial transactions and the information of farmers under his administration. The farmer can use the 'Farmer android app' to view his profile, track his sales details and view his payments. The ERP System provides transparency in financial transactions and optimizes the overall business process.

**FUTURE WORK**

Incorporating Consumer in the system: We can build a consumer e-commerce app so that the consumer can directly view and buy products from the app. Hence saving the time and hassle of visiting the store. We build a payment portal within the Web Application. We can include a payment portal so that the administrator can directly pay the farmers and collectors through the app using UPI. And scale the system to track other products. We can scale the system to keep an inventory of all the other products manufactured in the dairy and automating every possible process in the dairy.

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