

Milk and Milk Products Delivery Process Management Systems

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Abstract--- The main goal of the milk and milk products delivery process management system is to make dairy products available in online that will allow customers to manage purchasing, ordering, and track the delivery status. Every industry has constant challenges. In February 2012, the government approved the National Dairy Plan Phase-I (NDPI), which aims to increase milk production and improve milch animal productivity. The plan will be implemented from 2011-12 to 2016-17 and will receive a total investment of approximately 2242 crore. This will help meet the rapidly growing demand for milk. Improved productivity, fortified and expanded village level infrastructure for milk procurement, and expanded access to markets are all ways in which NDP-I will assist domestic producers in meeting the anticipated 150 million tonnes of milk demand by 2016–17. Waste of time and labour due to an inefficient management structure. It will be simple to sell things using a web-based application and connect with the administrator using this application. The administrator will oversee the application and daily update the list of Milk and Milk products that are available for purchase. The number of each product will also be updated in the database by the administrator, and the database will be automatically updated. The provision of customer support to users is the primary goal. Milk and Milk products delivery process management system provides information about the available milk their status, and a list of them. Users, milk product System with a wide selection of milk products. This system offers users a unique interface and login. Every Milk and Milk Product part can be searched for by, the management can then take the necessary action upgrade the facilities. The idea's final focus is on reports. Reports are kept that show the status of the products, payment and purchase information, and sales information Since fresh milk is both more easily spoiled and bulky to store, this solved the problem of how to keep it. The market for commercially available raw milk is small. This idea establishes the appropriate relationship between managers, Milk Dealers, and customers.

Keywords--- Milk Product, Milk Dealer, Dealer Process Management.

I. INTRODUCTION

Our level of existence is being revolutionized by cellphones and the advent of technology. We may enjoy the luxury of Dairy products in the comfort of our own homes while binge-watching Netflix with only a few taps and swipes. The idea of eating in with family and friends has supplanted going out to eat; if someone is exhausted from a long day at work and lacks the energy to visit a dairy store, they can place an online order with a simple tap of their smartphone.

With the idea of online dairy product delivery, the dairy industry, which is among the fastest expanding in the Indian economy, is expected to see even greater growth in earnings in the years to come. India has had a large population for a long time due to migration and inflow of people from nearby towns and villages. The idea of an online dairy product delivery system will receive a lot of attention given the speed at which cities are developing and the large number of people

moving there in quest of employment or a higher standard of living.

This article focuses on the inventory management of perishable goods, including milk and curd, which have a short shelf life. The dairy sector is the subject of this research. Because perishable goods have a limited shelf life and cannot be used after that time, it is more important to properly manage their inventory than that of durable goods. The management of perishable product inventories is significantly impacted by variations in supply and demand.

II. LITERATURE REVIEW

Caraba et al [6] sought to compare and evaluate the milk produced by Turcana breed sheep raised on various feeding regimens. A quantitative and qualitative analysis was conducted on the sheep's milk, yielding the following results: daily milk production (DMY), physical parameters (pH, freezing point), chemical composition (lactose (L), fats (F), total proteins (TP), non-fat solids (Snf), content of heavy

metals and trace elements (Zn, Cd, Cu, Fe, Mn, Pb), and microbiological parameters (number of somatic cells (SCC), total number of aerobic mesophilic germs that develop at 30 °C (NTG), number of coliform bacteria (CT), number of *Staphylococcus aureus*). On the farm, the fodder complex's administration led to a modest quantitative rise in milk output as well as increases in fat, protein, and lactose content. Milk samples from sheep given the fodder complex showed increases in the levels of trace elements Zn, Fe, and Mn. There was no evidence of any contamination source in the grazing area based on the heavy metal content. Additionally, the microbiological parameters were within permissible bounds, demonstrating both the absence of microbiological contamination in the milk samples and a good general condition of health at the emergency level.

Schiano et al [7] This study set out to define how consumers felt about the sustainability of dairy products made from milk and dried fruits, as well as the corresponding plant-based substitutes. Two online surveys and focus groups were carried out. In the first survey, respondents were asked to select if a product, such as protein powder or fluid milk, was sustainable. Maximum difference scaling was used to assess the value of certain dairy product features to sustainability. There were two tasks in the follow-up survey where participants had to choose whether dried dairy ingredients or generic dairy products were natural, healthful, ethical, trustworthy, or sustainable. More than 50% of consumers of dairy products said they searched for information about sustainability. Customers that bought dairy products as well as plant-based dairy alternatives self-reportedly gave sustainability a higher priority. The results of focus groups and surveys on maximum difference scaling revealed five essential components of sustainability: low greenhouse gas emissions and carbon footprint, minimal or no preservatives, animal welfare and happiness, and simple or minimal ingredient lists. Consumer perceptions of sustainability also included package type and organic status, with plant-based dairy substitutes ranking higher than dairy products in terms of sustainability, followed by protein powders and fluid milk.

Bacigale et al [8] This suggests a long-term health problem for consumers if milk actors along the value chain do not take the necessary action. The handling techniques and infrastructures employed by the actors involved throughout the value chain, as well as the ecologies of production axis, which reflect the production zones, have an impact on the microbiological quality. Animal husbandry, milking technique, milk processing, and milk packaging factors did not significantly affect the physicochemical characteristics that were being studied. These findings suggested that the lack of necessary equipment and expertise along the milk value chain contributes to the health hazards associated with handling and production methods for milk actors. Along the milk value chain nodes, hazard analysis critical control point (HACCP) procedures must be strictly adhered to in order to enhance milk quality and lower consumer hazards in the provinces of South Kivu and

Tanganyika.

Huerta-Soto et al [9] The goal of this study is to increase DSC management operational excellence and ongoing optimization strategy improvements. Design, procedure, and strategy the methodology of the study is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria. PRISMA is the established protocol for reporting evidence in meta-analyses and systematic reviews. Publications and associations in the health sciences back the criteria. The authors used descriptive statistics in this investigation. Conclusions The dairy industry has been able to increase operational efficiency through the use of cutting-edge optimization techniques as a result of this modernization program. While writers have recently begun employing artificial intelligence (AI) and machine learning (ML)-based techniques, historically, DSC researchers have depended on mathematical modeling methods. Though the majority of solutions are still focused on mathematical modeling, AI/ML-based approaches are rapidly taking the lead. In the transit stage, distributors, logistics firms, and retailers get data transmitted by means of cloud computing, shared databases, and software.

Winans et al [10] The life cycle assessment (LCA) of an unsweetened almond milk from California is conducted in this study. The manufacture of almond milk in primary packaging at the factory gate is covered by this LCA. All of the almonds farmed in the United States are grown in California under irrigation. The LCA model was developed using primary data collecting from a single almond milk supply chain and spatially resolved modeling of almond agriculture. Additional impact categories from the US EPA's TRACI assessment approach are also assessed, even though freshwater consumption (FWC) and global warming potential (GWP) are the environmental indicators of highest relevance. Co-products are accounted for through economic allocation; however, in order to comprehend how co-product allocation decisions, affect outcomes, mass-based allocation and displacement are also examined.

III. PROPOSED METHODOLOGY

Right now, they are using a manual system. Printing tasks are challenging. The current method requires manual reference making at every step. The likelihood of making a mistake that results in management receiving inaccurate information is considerable. It is not a picnic either to generate reports. The time factor is another major issue with the current method. Without timely reports, management will be unable to address issues with production, purchases, or other controls.

3.1. Description of Modules

Authentication

The details of the authenticated person are stored in the authentication module. Even if the administrator is the only authenticated user, he still cannot access his login

without his username and password. Authentication is the procedure by which a user's identity is confirmed by acquiring and utilising specific credentials. The authorization process begins if the credentials are legitimate. After authentication, the authorization process is always the next step.

Customer Registration

Customer Registration module used to register the customer details like Customer id, Name, mobile no, mail id, address. The Customer Entry details store into the database. Any customer has the permission to register his Details.

Employee Details Administrator adds the Employee Details like Employee id, Employee Name, Phone no, mail id, address, aadhar, join date, salary. The Employee details store into the database. Administrator only has the permission to Add the Employee Entry Details

Product Details

In this module Admin Add the product details are product id, Name, Amount, Expiry Date, Quantity, Details and we can store the information in database.

Order Details

In this module Admin Maintain the Order Details from Customer. The products are sold and in which date the products are delivered and the total amount details are maintained. The Order details are Order id, Date, Sale to, ID, name, Quantity, Price per qty, Tot Amount. Date

Delivery Details

Delivery Status In this module customer to check the status of order details, when it will be delivered. The delivery details contain information about order like Order id, Date, Sale to, ID, name, Quantity, Price per qty, Tot Amount and Status of order

3.2. Data Flow Diagram

One way to visually represent and understand how data moves through a system is with a data flow diagram. These form the backbone of the system and serve as the primary instrument. The processing of data, from input to output, can be defined logically apart from the system's physical components. A logical data flow diagram is what this is called. Information can be physically seen moving from one location to another, as well as between different departments and individual workstations, in the data flow diagrams. Data flow diagrams are the actual building blocks of a comprehensive system description. There are multiple levels to the development of DFD's. A more comprehensive DFD can be constructed for each process shown in lower-level diagrams by moving on to the next level. Understanding at one level of detail is expanded into greater detail at the next level, which is the basic notion behind the process of exploding into new processes.

This is done until further explosion is necessary and an adequate amount of detail is described for analyst to

understand the process.

In the DFD, there are four symbols

- A square defines a source(originator) or destination of system data
- An arrow identifies data flow. It is the pipeline through which the information flows
- A circle or a bubble represents a process that transforms incoming data flow into outgoing flow
- An open rectangle is a data store, data at rest or a temporary repository of data

Salient Features of DFD'S

- The DFD shows flow of data, not of control loops and decision are controlled considerations do not appear on a DFD.
- The DFD does not indicate the time factor involved in any process whether the data flow take place daily, weekly, monthly or yearly.
- The sequence of events is not brought out on the DFD.

Data Flow Diagram

Level 0

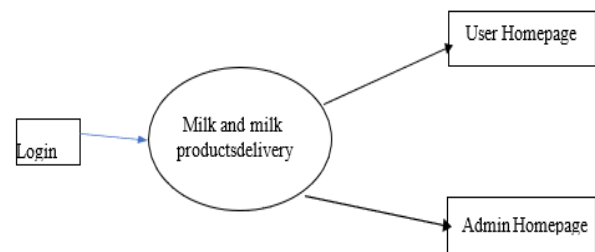


Figure 1 - Level 0

Level 1

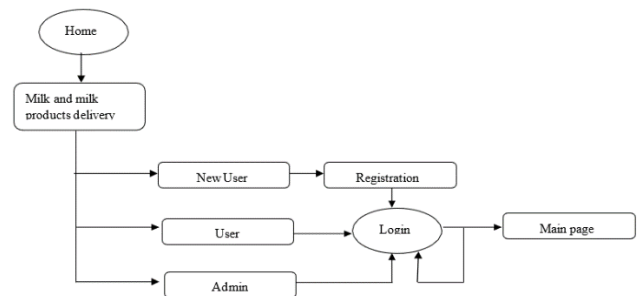


Figure 2 - Level 1

Level 2

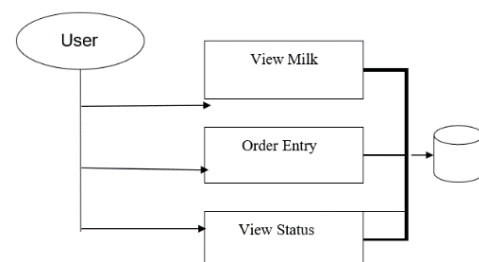


Figure 3 - Level 2

IV. SYSTEM CONFIGURATION

Table 1: Hardware Specification

Processor	Dual Core
Hard Disk	160 GB
Ram	512 MB
Monitor	15" Color Monitor
Keyboard	104 Keys Standard Keyboard
Mouse	Standard 3 Button Mouse

Table 2: Software Specification

Front End	PHP
Back End	MY-SQL
Tool	XAMPP

V. RESULTS AND DISCUSSION

Sample Input

Implementation details: This interface has been developed so that those involved in the milk dealers make milk products available online. So, the users can order their milk products easily and access it through phone.

Customer page: All users of the site are shown on this page. Both the viewer and the administrator can access this page

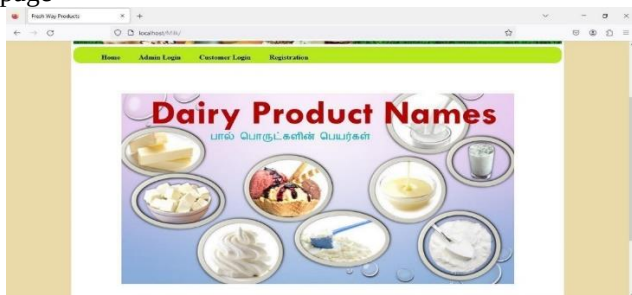


Figure 4 - Customer Page

Login Page

This page is the first page to be shown when the customer accessing the site. Customer can enter the site with username and password.



Figure 5 - Login Page

Table Design

Table 1

Table 3: Customer Details

Description: This Table Contains Customer Details

Customer id	number	Not null
Name	Varchar (50)	Not null
Phone No	Varchar (50)	Not null
Mail Id	Varchar (50)	Not null
Address	Varchar (50)	Not null

Table 2

Table 4: Product Details

Description: This Table Contains Product Details

Product id	number	Not null
Name	Varchar (50)	Not null
Description	Varchar (50)	Not null
Amount	Varchar (50)	Not null
Sugar Level	Varchar (50)	Not null
Max Expiry Date	Varchar (50)	Not null

Table 3

Table 5: Order Details

Description: This Table Contains Order Details

Order id	number	Not null
Date	Varchar (50)	Not null
Customer ID	Varchar (50)	Not null
Product Id	Varchar (50)	Not null
Name	Varchar (50)	Not null
Price	Varchar (50)	Not null
Quantity	Varchar (50)	Not null
Tot amt	Varchar (50)	Not null

Output Sample

In this section, execution results of order placed provided by listing several functionalities included and explaining these functionalities with the help of the screenshots

Delivery System

It provides mostly hassle-free delivery system and extreme convenience comforts at the door step.

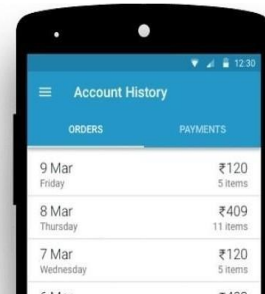


Figure 6 - Delivery System

Setting Vacation Time Off

We can just set the start and end dates so that we won't deliver on those dates



Figure 7 - Setting Vacation Time Off

Manage Expenses

keep a tab on the daily expenses and also have the consolidated spending over the last month.

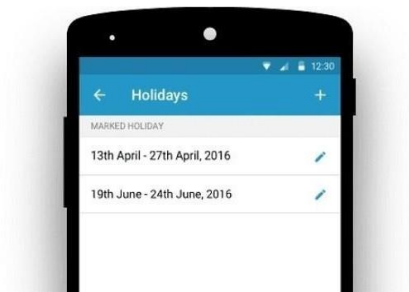


Figure 8 - Manage Expenses

Create Repeat Orders

By ordering butter once a week and curd twice in a week customer can set the orders to repeat.

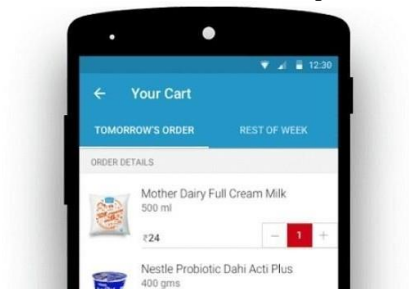


Figure 9 - Report Orders

VI. CONCLUSION

While most people think about digitization, milk delivery is probably not one of them. After all, there's no technological requirement to automate the two-step process of filling milk canisters and portioning it at delivery sites. But that's where the industry stepped in, and now a number of companies provide digital milk delivery options. Time and adulteration have been the most significant issues with the distribution technique.

REFERENCE

- [1] Karouani, Y., & Elgarej, M. (2022). Milk-run collection monitoring system using the internet of things based on swarm intelligence. *International Journal of Information Systems and Supply Chain Management (IJISSCM)*, 15(3), 1-17.
- [2] Soares, F. A., Salinas, B., Reis, S., & Nunes, C. (2023). Milking the milk: Exploiting the full potential of milk constituents for nature-derived delivery systems. *Trends in Food Science & Technology*.
- [3] Tan, A., & Ngan, P.T. (2020). A proposed framework model for dairy supply chain traceability. *Sustainable Futures*, 2.
- [4] Duguma, B. (2022). Milk composition, traditional processing, marketing, and consumption among smallholder dairy farmers in selected towns of Jimma Zone, Oromia Regional State, Ethiopia. *Food Science & Nutrition*, 10(9), 2879-2895.
- [5] Marialuisa, M., Matteo M, S., & Muhammad, S. (2023). Optimizing milk-run system and IT-based Kanban with artificial intelligence: an empirical study on multi-lines assembly shop floor. *Production & Manufacturing Research*, 11(1), 1-29.
- [6] Caraba, I.V., & Caraba, M.N. (2023). Effects of Feeding Management System on Milk Production and Milk Quality from Sheep of the Turcana Breed. *Animals*, 13(18), 1-14.

- [7] Schiano, A.N., Harwood, W.S., Gerard, P.D., & Drake, M.A. (2020). Consumer perception of the sustainability of dairy products and plant-based dairy alternatives. *Journal of Dairy Science*, 103(12), 11228-11243.
- [8] Bacigale, S. B., Ayagirwe, R. B., Mutwedu, V. B., Mugumaarhahama, Y., Mugisho, J. Z., Nziku, Z., ... & Mignouna, J. (2023). Assessing milk products quality, safety, and influencing factors along the dairy value chain in eastern Democratic Republic of the Congo. *Frontiers in Sustainable Food Systems*, 7, 1-18.
- [9] Huerta-Soto, R., Ramirez-Asis, E., Tarazona-Jiménez, J., Nivin-Vargas, L., Norabuena-Figueroa, R., Guzman-Avalos, M., & Reyes-Reyes, C. (2023). Predictable inventory management within dairy supply chain operations. *International Journal of Retail & Distribution Management*.
- [10] Winans, K.S., Macadam-Somer, I., Kendall, A., Geyer, R., & Marvinney, E. (2020). Life cycle assessment of California unsweetened almond milk. *The International Journal of Life Cycle Assessment*, 25, 577-587.