



GovDairySync

'An online platform to link potential dairy importers of the world with the major dairy product manufacturers of the Country.'

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Abstract : This research outlines an online platform that can act as a bridge between large Indian companies and international milk exporters interested in purchasing dairy products. Traditional methods of bringing buyers and sellers together often involve intermediaries, limited access to information, and a lack of influence. This can result in loss of time and increased costs for both parties. The application platform facilitates business and communication by creating a direct connection so that customers can review products, specifications, and production licenses. Additionally, manufacturers can enter new markets, showcase their capabilities, and negotiate directly with customers.

Index Terms - Milk, Online Registration, Dairy Farmers, Online Platform, Dairy Importers.

INTRODUCTION

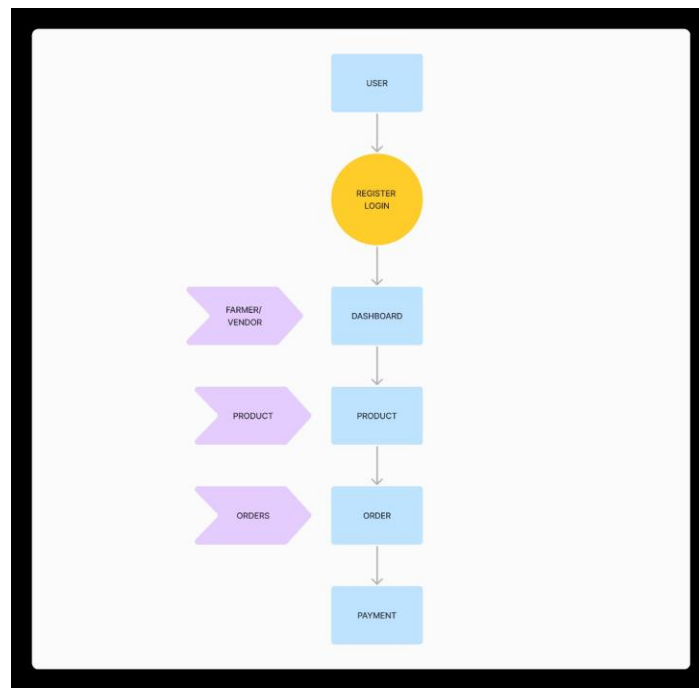
Milk and dairy products have played an important role in Indian history for thousands of years. Around 8,000 years ago, market involved the exchange of milk for grain, resources and other goods. A few years later (3300-1300 BC), milk became important in the Indus Valley Civilization. Special clay pots were designed specifically for milk, not food storage. Additionally, during the Vedic period (from 1700 BC) cows were considered sacred and milk became an important part of daily rituals as fresh milk was given as an offering to the Gods. Later, under British rule, the situation changed, although milk was still a necessity. The farmers were often at risk from middlemen who controlled the market in the area. Farmers made less profit from this and consumers had fewer opportunities. Additionally, the country's 'Operation Flood' project in the 1970s changed the landscape of the dairy industry. Cooperative farmers sold their products directly to consumers, eliminating middlemen. The availability and affordability of milk across the country increased by strengthening the infrastructure for milk collection and processing. In India today, milk is more than just food. It is an important source of nutrients for health and well-being, especially for children and vegetarians. It has given great economic power to millions of farmers and has become an important part of everyone's life.

Although India is the world's largest milk producer, it faces many challenges on its way. The problems encountered are mostly from dairy farming and milk exports.

In dairy farming, the challenges faced are low productivity that includes number of factors, including inadequate supply, poor breeding methods, and insufficient veterinary care. Next, lack of machinery and modern technology in traditional farming methods raises production costs and reduces farmer profits. Also, quality issues are faced as the milk quality can be harmed by adulteration, inadequate testing, and inadequate cooling facilities, which can affect both domestic consumption and export acceptance. Plus, there is lack of knowledge about market trends, financing options, and best practices.

Moreover, the challenges faced by Indian milk producers to keep up with the good quality and safety standards in importing nations, making large investments in infrastructure and processing technologies. Limited Product Diversification is another challenge as India is at a disadvantage to competitors exporting dairy products with added value, such as cheese and yogurt, because of its concentration on bulk milk exports.

To solve these problems we have proposed an online platform to link potential dairy importers of the world with the major dairy product manufacturers of the Country.



LITERATURE SURVEY

Intelligent Communication Ecosystem for the Cattle Animal Welfare Technologies.

Researcher: Anita Gehlot, Pravin Kumar Malik, Rajesh Singh.

Real-time wireless technology is being used to improve sustainability in dairy cattle farming by implementing monitoring technologies and intelligent systems for various applications, with recommendations including wearable devices, renewable energy harvesting, drone-based animal attack detection, and block-chain for the milk supply chain.

In 'Dairy 4.0', Anita Gehlot and colleagues (2022) reported that the United Nations adopted the Sustainable Development Goals in 2015 to combat poverty, protect the environment, and ensure peace and prosperity by 2030. This study explores various aspects of dairy cattle, including animal health monitoring, location tracking, milk quality monitoring, and feed planning. Emerging technologies like IoT, AI, ML, robots, drones, and block-chain are crucial for improving productivity and sustainability in dairy cattle. Recommendations include using wearable devices, renewable energy, drone-based animal attack detection, and blockchain for milk supply chain analysis.

The group advocate that feature papers are advanced research articles with high impact potential, involving multiple techniques, future research directions, and possible applications.

Factors associated with the financial performance of spring-calving, pasture based dairy farms.

Researcher: G. Ramsbottom, B. Horan

The use of additional feed in agricultural production can increase the amount of milk per cow and per hectare, but not using it due to growth-related costs and increasing non-food items and fixed costs will also reduce profits.

George Ramsbottom and colleagues (2015) examined factors associated with spring calving and financial performance of pasture dairies. This study focused on the effect of additional feed purchases on milk production and profitability in dairy farming. The study found that farms in regions with longer growing seasons harvested more produce, resulting in higher milk yields and better profits. However, the use of feed will result in lower yields per hectare and lower profits. This highlights the importance of considering the cost of creating pasture waste when using feed.

Application of Optimization Techniques in the Dairy Supply Chain: A Systematic Review.

Researcher: Mohit Malik, Vijay Dahiya, Rahul S. Mor

The dairy industry is undergoing modernization and implementing optimization techniques, with mathematical modeling-based methods still dominant but artificial intelligence and machine learning approaches gaining traction to improve operational efficiencies in the dairy supply chain.

A group led by Mohit Malik from the National Institute of Food Technology Entrepreneurship and Management (2022) studied application of optimization techniques in the dairy supply chain. The global dairy market is undergoing modernization with a focus on optimization techniques using machine learning and artificial intelligence. The dairy industry aims to improve operational efficiencies through these techniques. The systematic review highlights the potential of optimization techniques in the dairy supply chain, with a focus on mathematical modeling and AI/ML-based algorithms. The Ministry of Food Processing Industries has allocated funds to enhance the competitiveness of Indian food manufacturing companies. The review emphasizes the need for further research in optimizing the dairy supply chain and identifies gaps in the field.

The researchers evaluated 1758 documents.

Discussing potential shortcomings, "The review has limitations, such as excluding research in other languages. It explores themes like system and network infrastructure risks, ML and AI in the dairy industry, and challenges to new technology adoption," they concede.

They propose that feature papers are advanced research articles with high impact potential in the field. They should be substantial, original, involve multiple techniques, offer future research directions, and describe potential applications.

India: Increasing demand challenges the dairy sector.**Researcher: Meeta Punjabi**

Thanks to the government's program called Operation Flood, India has transformed from a small dairy country to the world's leading milk producer. However, the decline in investment in the dairy industry since the end of the strategy has raised concerns. Dairy products are currently India's number one commodity, with a production value of 1.179 billion rupees in 2004. By 2022, milk demand will reach 180 million tons, with an average annual increase of 5 million tons. Historically, the policy environment has been conducive to the expansion of cooperatives, but market liberalization in recent years has encouraged private sector involvement in the dairy industry. Livestock development and milk production are key components of poverty reduction strategies. Dairying provides regular income, while farming income is seasonal.

Dairy Farming Innovations for Productivity Enhancement.**Researcher: Vidya Nimbalkar, Harish Kumar Verma, and Jaswinder Singh**

This article discusses the importance of modern agriculture in supporting food production and protecting natural resources. Demand from the dairy industry has increased due to rapid economic growth, population growth, and urbanization. Milk is the most valuable agricultural product, ranking third in the world in terms of production in 2013. Milk is an important food security product in many developing countries and China. This is one of the important tasks in reducing poverty, unemployment, and income inequality. However, using natural resources to achieve maximum productivity is the biggest challenge for farmers. The use of new dairy products at all stages of production can improve animal production and farmers' health. Agricultural innovations are new practices/products/technologies that are effective options to support animals on a daily basis, suitable for specific areas and physiological levels of animals.

Aerial Animal Biometrics: Individual Friesian Cattle Recovery and Visual Identification via an Autonomous UAV with Onboard Deep Inference.**Researcher: W. Andrew, C. Greatwood and T. Burghardt**

The paper presents a computationally-enhanced M100 UAV platform that uses deep learning inference to autonomously identify individual Holstein Friesian cattle in freely moving herds. The system uses three deep convolutional neural network architectures: a YoloV2-based species detector, a dual-stream CNN for exploratory agency, and an InceptionV3-based biometric LRCN for individual animal identification. The performance of these components was evaluated offline and online, with error-free identification performance reported in an online experiment. The system is the first of its kind and a successful step towards autonomous biometric identification in open pasture environments for tag-less AI support in farming and ecology.

Low-cost empirical modeling to determine cooling savings in a dairy plant using a pre-cooler.**Researcher: Russel Mhundwa; Michael Simon; Stephen Tangwe**

This research aimed to determine cooling savings on dairy farms using a milk pre-cooler. A mathematical model was created using the cooling water inlet and outlet temperature of raw milk to the BMC as predictors for the electrical energy consumption of the BMC. Data was collected and analyzed using Matlab software. The study found that an average of 39.6% savings can be achieved on milk cooling using a pre-cooler. A statistical test showed that both predictors are primary contributors to the desired output, and a strong correlation coefficient of 0.987 indicated a strong relationship between the actual and modeled cooling savings. The findings will be used in future work on energy efficiency in the dairy sector for performance monitoring and optimization of cooling systems.

Safety accidents and control of dairy products: An analysis from the view of information asymmetry.**Researcher: W. Wei and Y. Minjie**

The article discusses the trust crisis in dairy product safety due to high frequency of accidents. It identifies market failure and supervision failures as the reasons for these accidents and the relationship between commercial and system trust. To rebuild consumer trust, the article suggests implementing quality management systems, improving information asymmetry in the product market, and increasing raw milk production scale. The article also discusses the role of traditional and cyber extension in agricultural development in India, highlighting the potential for sustainable agriculture, agribusiness, and contract farming in the post-green revolution scenario. The paper conceptually visualizes the coexistence of traditional and virtual extensions in future Indian agriculture development.

Consumer attitude and intention to buy Organic Food as a result of brand extension: An experimental approach**Researcher: N. R. Ashari, T. M. Miranda, and D. Wawan**

The results show that product expansion does not affect consumers' attitudes towards organic food, thus H1a and H1b do not affect consumers' attitudes and behaviors towards organic food. Support. However, consumers' attitudes are related to their purchase intentions, supporting H2a and H2b. After the experiment, the subjects said they were concerned about the taste of the milk, its price, the benefits of the product and its image. Additionally, the studies in Group 1 did not consider whether the relationship between the non-organic parent product and the organic product continues to be inappropriate, because the parent brand and its products continue to be the same product.

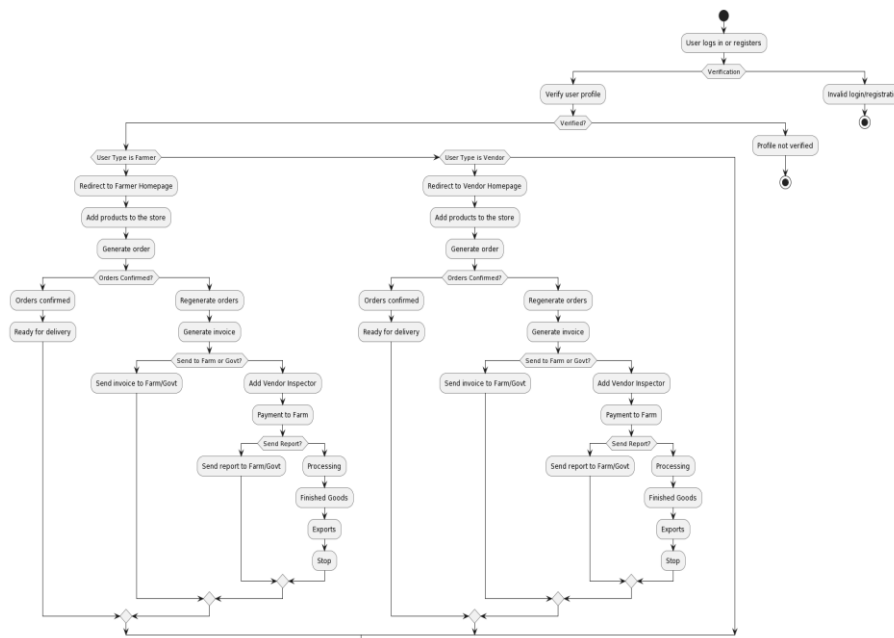
SYSTEM OVERVIEW

Online Registration and Processing System for Dairy Farmers and Dairy Exporters is a project involving farmers, domestic producers and importers. The platform brings the future to the dairy industry by using modern technology and promoting global connectivity, ensuring success for farmers, business growth for countries and quality dairy products for consumers worldwide.

We have used two-factor authentication to protect data and verify user identity for secure access. Farmers can easily register their products using a simple database to ensure accurate product names and capture important messages. Manufacturers can use built-in tools to track inventory, maintain product quality, and focus on performance levels. Customers can search for dairy products, filter search results, and contact companies using an advanced search engine. It is a system that helps suppliers, producers and farmers communicate while keeping customers information confidential.

The system provides dairy producers with access to a large global importer database. Manufacturers can showcase their products and expand their business reach by interacting with foreign buyers. The comprehensive search engine on the platform allows customers to find a specific dairy product that suits their needs. In addition, the system has a special communication system that protects user's privacy and allows direct

communication between farmers, producers and users. In addition, the most important system of data security is to ensure that data transmission is secure and to provide reliable data encryption for data storage. It also increases user's confidence by complying with national and international data protection laws. With these features, the platform supports processes across all dairy products in the industry and supports safety, efficiency and transparency.



CONCLUSION

In conclusion, the dairy industry in India can undergo a major transformation with the use of the proposed online platform. Through the platform's direct connection between foreign exporters and domestic dairy producers, it will stimulate the growth of trade and commerce, thus providing companies with greater access to jobs and opportunities to start businesses. In addition, it will promote transparency and recognition as trust is built by both parties through transparent communication, documentation of evidence, analysis and data analysis. It will also increase the efficiency and effectiveness of direct negotiations, and eliminating the middleman can reduce business costs and increase everyone's income. Finally, it will improve the use of information to support decision-making because both producers and consumers can benefit from the combination of analysis and business insights to inform business decisions.

ACKNOWLEDGEMENT

We are honored to present the research paper on "GovDairySync." We would like to take this chance to express our gratitude to Ms. Tejaswini S. Pawar, our guide, for providing us with all the support and direction we required. She has our deepest appreciation for her thoughtful assistance. Her insightful advice was beneficial.

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