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Application For Monitoring of Wool From Farm To Fabric

P.Pavan Kumar, C.Meghana, B.Salma Sofi, D.Rajitha,
Fathima Zohra Shaik, K.Sajida

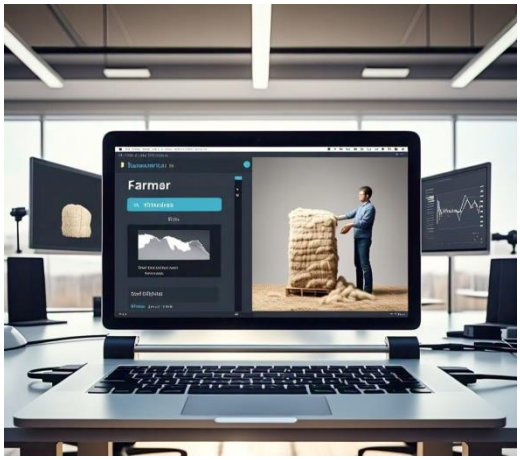
Professor, Chaitanya Bharathi Institute of Technology, Proddatur, A.P, India.
UG Student, Chaitanya Bharathi Institute of Technology, Proddatur, A.P, India.
UG Student, Chaitanya Bharathi Institute of Technology, Proddatur, A.P, India.
UG Student, Chaitanya Bharathi Institute of Technology, Proddatur, A.P, India.
UG Student, Chaitanya Bharathi Institute of Technology, Proddatur, A.P, India.
UG Student, Chaitanya Bharathi Institute of Technology, Proddatur, A.P, India.
pavankumar.palla@gmail.com, akumallameghana6@gmail.com, salmasofi188@gmail.com, desamrajitha614@gmail.com, zohra.shaik248@gmail.com, ksajidaofficial@gmail.com

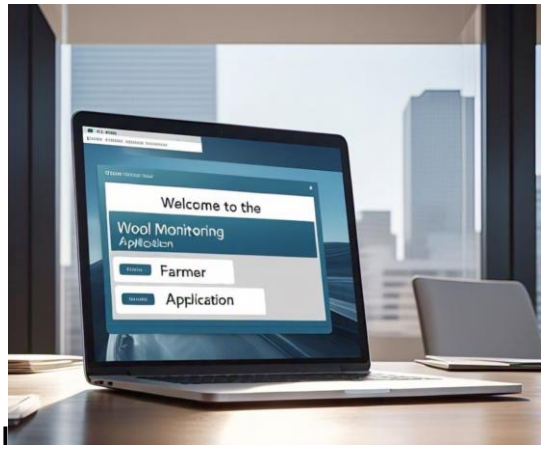
ABSTRACT

This project entails the development of an end-to-end wool monitoring application, employing ReactJS for frontend, Spring Boot for backend, and MySQL Workbench for the database. The application comprises three key modules: Admin, Farmer, and Trader. The Admin module is responsible for managing market data, farmer education, farmer and trader lists, as well as overseeing wool quality. Farmers utilize the application to register, add farm and sheep details, process wool into fabric, and showcase their fabric creations. Traders, on the other hand, access market information, purchase qualified wool, buy fabrics from farmers, and track their orders. The project integrates seamlessly to streamline wool management from farm to fabric, promoting efficiency and transparency across the wool supply chain.

Keywords: Wool Monitoring, Supply Chain Management, Integrated Platform.

I.INTRODUCTION





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The wool industry plays a significant role in global textile production and trade. However, managing the wool supply chain remains a challenging task due to fragmented processes, lack of transparency, and limited access to real-time market data. To address these challenges, this project focuses on developing an integrated wool monitoring application that facilitates end-to-end management across the wool supply chain, from farm to fabric.

The application is designed to cater to three primary stakeholders: **Admin**, **Farmers**, and **Traders**. Each user group has a distinct role in the wool supply chain, and the application aims to provide tailored features to optimize their operations. The **Admin** module ensures efficient data management, market oversight, and quality control of wool, ensuring that market participants are well-informed and regulated. The **Farmer** module empowers farmers to register their farms, manage sheep details, process wool into fabric, and display their finished products, fostering better visibility and market access. Finally, the **Trader** module enables traders to access up-to-date market information, purchase high-quality wool, and track their transactions, ensuring smooth and informed trading processes.

The system is built with modern technologies, utilizing **ReactJS** for a dynamic and responsive frontend, **Spring Boot** for a scalable backend, and **MySQL Workbench** for database management. This technology stack ensures a reliable, efficient, and user-friendly platform that enhances the transparency, traceability, and efficiency of the wool supply chain.

By integrating these features into a single platform, this wool monitoring application aims to bridge the gap between farmers, traders, and administrators, creating a transparent and streamlined environment for managing wool from the farm to the finished fabric. The system's ultimate goal is to improve market efficiency, reduce inefficiencies, and create a more sustainable and accessible wool supply chain for all stakeholders involved.

II.LITERATURE SURVEY

Smith ,J. et. al. (2023) “provide a comprehensive review of IoT applications in the wool supply chain. They discuss advancements in IoT technology and its impact on visibility, traceablity, and eficiency.The study highlights case examples and future directions for leveraging IoT in wool management, emphasizing potential to revolutionize industry practices”.

Patel, R. et al.(2024) ”analyze recent trends and developments in sustainable supply chain practices within the wool industry. Through systematic literature review, they identify emerging themes and research gaps, offering sights into strategies for promoting environmental stewardship and social responsibility. The study serves as a valuable resource for academia and industry professionals seeking to enhance sustainability and wool production”.

Existing System:

Currently, the wool industry lacks a comprehensive monitoring system, leading to inefficiencies and opacity in the supply chain. Manual record-keeping and communication methods are prevalent among farmers, traders, and administrators, resulting in delays and inaccuracies. Moreover, there is a lack of centralized market data, hindering informed decision-making. These drawbacks contribute to disjointed processes, potential quality issues, and difficulty in tracing wool origins.

Advantages of the Existing System:

1. **Familiarity and Low Initial Cost**: The current manual systems are well-known and easy for stakeholders to use, requiring little to no upfront cost for implementation. This makes it more accessible for small-scale operations.
2. **Personalized Communication**: Direct communication between farmers, traders, and administrators enables customized solutions and strengthens relationships. This fosters trust and allows quick resolution of issues.

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3. **Adaptability to Local Context**: Traditional methods are often better suited to local needs and infrastructure, allowing flexibility in the way wool is managed. This is particularly advantageous in rural or less tech-savvy areas.
4. **Flexibility in Process Management**: Stakeholders can adjust processes and transactions in real-time, ensuring that negotiations and decisions are tailored to specific situations. This flexibility can benefit small-scale operations.

Disadvantages:

1. Contribute to disjointed processes
2. Potential quality issues
3. Difficulty in tracing wool origins

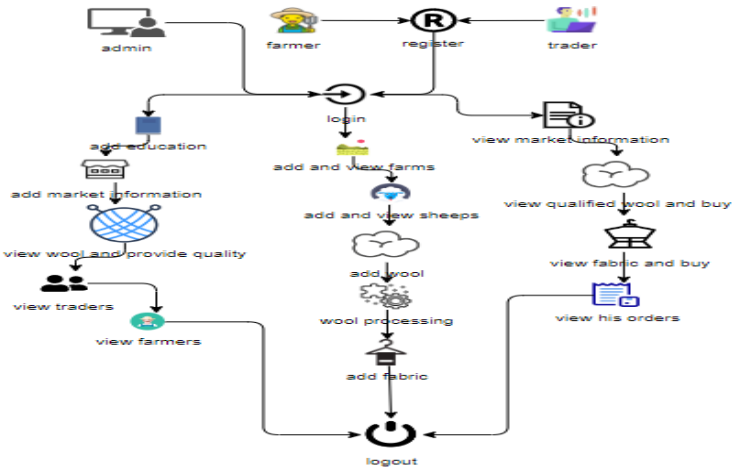
III.PROPOSED SYSTEM

Our proposed system is an end-to-end wool monitoring application, integrating ReactJS, Spring Boot, and MySQL Workbench. Consisting of Admin, Farmer, and Trader modules, it efficiently manages market data, facilitates farmer operations, and enables seamless trader transactions. Advantages include enhanced supply chain transparency, streamlined wool management, and improved efficiency in farm-to-fabric processes.

Advantages:

1. Include enhanced supply chain transparency
2. Streamlined wool management
3. Improved efficiency in farm-to-fabric processes

Architecture/Project Flow:



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Modules:

ADMIN:

Login: Admin will login to the application with his default credentials

Add Market Information: Admin will add the market information related to trader

Add Education: Admin will add the education to former for learning purpose.

Wool: Admin will view the wool added by farmer and provide quality

Traders: Admin will view the list of traders

Farmers: Admin will view the list of farmers

Logout: Admin must logout

TRADER

Register: Trader will register into the application with his details.

Login: Trader will login to the application with his credentials.

View Market Information: Trader will view the market information added by the admin.

View Wool: Trader will view the qualified wool and buy.

View Fabric: Trader will view the fabric and buy.

Orders: Trader will view his orders.

FARMER

Register: Farmer will register into the application with his details.

Login: Farmer will login to the application with his credentials.

Add Farm: Farmer add his farms and view them.

Add Sheep: Farmer will add the sheeps to his farm and view them.

Add Wool: Farmer will add the wool that he collected from his sheeps.

Wool Processing: Farmer will process the wool and make fabric

Add Fabric: Farmer will add his fabric

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View Education: Farmer will view the education like documents and videos uploaded by admin for his learning purpose.
Logout: Farmer must logout.

IV.CONCLUSION

In conclusion, the wool monitoring application provides an innovative solution to the inefficiencies and lack of transparency in the wool supply chain. By integrating the functionalities for Admins, Farmers, and Traders into a unified platform, the system streamlines processes, ensures better market data management, and facilitates smooth transactions across the entire supply chain. This approach enhances traceability, reduces manual errors, and promotes a more transparent, efficient, and sustainable wool industry. The system not only addresses current challenges but also offers a scalable solution that can adapt to the evolving needs of the wool market.

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