



UNIVERSITY OF EASTERN AFRICA, BARATON
SCHOOL OF BUSINESS

DEPARTMENT OF INFORMATION, SYSTEMS, AND COMPUTING
FINAL PROJECT PROPOSAL

SENIOR PROJECT INSY 492

TITLE: FARM LINK: LIVESTOCK AND PRODUCTS TRADING SYSTEM

BY

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INTRODUCTION

This project proposal aims to develop a system that addresses inefficiencies in market access, transparency, and supply chain management in livestock trading. Based on research highlighting the impact of digital tools in agricultural markets such as improved price fairness through reputation systems and secure transaction management the platform will integrate secure payments, veterinary consultations, and trust-based ratings. By streamlining transactions, enhancing quality verification, and fostering trust through verified seller reviews, Farm Link seeks to empower small-scale farmers while reducing risks for buyers. Aligned with global initiatives that support digital agricultural platforms, this project aims to create a scalable, user-friendly system that modernizes livestock and its product trading, enhances transparency and improves market efficiency.

BACKGROUD INFORMATION

Traditional livestock trading is often inefficient due to limited market access, reliance on middlemen, lack of transparency in pricing, poor quality verification of products and logistical challenges. Farmers struggle to connect directly with buyers, while buyers face difficulties in assessing livestock health and fair pricing. Additionally, inadequate transportation systems and the absence of secure digital payment solutions increase financial and operational risks. Drawing from successful digital livestock systems, farm link: livestock and products trading system seeks to address these challenges by providing an integrated online platform that connects farmers, buyers, veterinarians, and transporters. The system will feature real-time tracking, secure digital payments, veterinary consultations, and trustbased ratings to improve transaction security, enhance market accessibility, and create a more transparent and efficient livestock trading ecosystem.

Problem Statement:

In many regions, livestock farmers face significant challenges in selling their animals and livestock-derived products due to limited market access lack of transparency in pricing fraudulent transactions poor animal health records and lack of better transportation delivery and supply chain management of livestock products. Small-scale farmers struggle to reach potential buyers, while buyers face difficulties in verifying livestock quality health status and fair pricing. Existing livestock trading methods rely heavily on physical markets, brokers, and informal networks of livestock trading, which rely on word-of-mouth, middlemen, brokers, and local markets rather than organized digital platforms which often result in high transaction costs, delays, and market inefficiencies. Additionally, buyers struggle to find quality livestock and products at competitive prices, as there is no centralized and transparent platform for transactions. The absence of real-time tracking, secure payment methods, and verified sellers makes the process risky and inefficient.

Proposed solution

To address these challenges, farm link: livestock and products trading will provide an integrated e-commerce platform where farmers can directly connect with buyers' transporters and list their livestock and products, receive fair pricing, and access reliable transportation services. The system will feature real-time tracking, secure digital payments and a transparent supply chain, ensuring a seamless and efficient trading experience for all stakeholders by leveraging the modern technology such as online payments and digital vet consultations, these platform aims to empower farmers, improve market accessibility, and enhance the overall efficiency of the livestock supply chain. The all sells and transactions will be rated and reviewed to improve credibility hence ensure trust between buyers and sellers.

RELEVANCE OF THE PROBLEM

The Farm link: livestock and product trading system are a transformative digital solution designed to address key challenges in livestock trading, including limited market access, lack of transparency, fraudulent transactions, and inefficiencies in supply chain management. By providing an integrated online marketplace, the system enhances market accessibility by connecting farmers directly with buyers, eliminating middlemen, and ensuring fair pricing. It fosters transparency and trust through verified seller profiles, digital veterinary health records, and a trust-based rating system, enabling buyers to make informed decisions. Secure digital payment options reduce the risks associated with cash transactions, while real-time tracking and logistics coordination streamline delivery, minimizing delays and ensuring livestock arrives in optimal condition. Additionally, the system promotes economic empowerment by giving small-scale farmers equal opportunities in a competitive market, reducing exploitation, and maximizing their profits. With scalability in mind, Farm Link has the potential for future expansion through partnerships with agricultural organizations to further regulate and support the industry. By modernizing livestock trading, this system creates a more efficient, secure, and transparent marketplace, ultimately fostering sustainable agricultural development and economic growth.

Objectives of the System

1. Analyse existing livestock trading challenges to establish a structured framework that enhances market accessibility, transparency, and efficiency. Evaluate system requirements, including user needs, transaction workflows, security mechanisms, and data management strategies, to ensure a robust and scalable solution.
2. Design a user-friendly interface that facilitates seamless interactions between farmers, buyers, veterinarians, and transport service providers while ensuring a secure and scalable database architecture for managing livestock records, transactions, and logistics tracking. Integrate digital payment gateways and a trust-based rating system to enhance transparency and user confidence.
3. Develop a fully functional e-commerce platform that enables farmers to list livestock and products, buyers to make secure purchases, and logistics providers to ensure

efficient delivery. Implement security measures such as role-based access control, encrypted transactions, and fraud detection mechanisms to protect all stakeholders

while enhancing system performance through data analytics for market trend analysis and price forecasting.

SCOPE

The system focuses on creating a unified digital marketplace connecting farmers, buyers, transporters, and veterinarians to address inefficiencies in livestock trading. It includes core features such as direct buyer-seller interactions, secure digital payments, trust-based rating systems, veterinary health certifications, and logistics coordination, while excluding IoT devices and blockchain technology. Geographically, it targets small-scale farmers and buyers in regions with limited digital infrastructure, prioritizing scalability through partnerships with agricultural organizations. The platform's technical scope emphasizes user-friendly interfaces, encrypted data management, and fraud detection, though it requires basic digital literacy and stable internet access. Limitations include dependency on regulatory compliance and offline functionality constraints. Overall, farm link aims to modernize livestock trade by enhancing transparency, reducing intermediaries, and fostering equitable market access without relying on advanced technologies, ensuring inclusivity for resource-constrained stakeholders.

FEASIBILITY ANALYSIS

Technical Feasibility

Free-tier resources and open-source tools offer extensive community support and a path for future growth.

Frontend Web Interface: React.js for dynamic, user-friendly dashboards tailored to farmers, buyers, and transporters.

Backend tools and frameworks server-Side Logic: Node.js for secure transaction processing, fraud detection, and API integration.

Security: OAuth 2.0 for role-based access control like farmers.

Workflow Integration:

Payment Gateways: M-Pesa APIs for secure, fraud-resistant transactions, aligning with Kenya's digital payment trends.

Economic Feasibility

1. Cost

Development: User-friendly interfaces and secure payment gateways require upfront investment.

Maintenance: Cloud-based hosting and fraud detection algorithms reduce long-term operational expenses.

2. Market Demand:

- **Target users:** Small-scale farmers and buyers in regions with high livestock density but limited digital infrastructure (pastoralist communities in Kenya)
- **Competitive edge:** Unlike fragmented solutions, Farm Link integrates logistics, vet services, and trust metrics, addressing gaps in existing platforms.

Operational Feasibility

1. User Adoption:

- **Strengths:** Simplified interfaces and SMS-based updates cater to low-literacy users, mirroring successful African ICT models.

TOOLS/SOFTWARES

Frontend React.js For dynamic web interfaces.

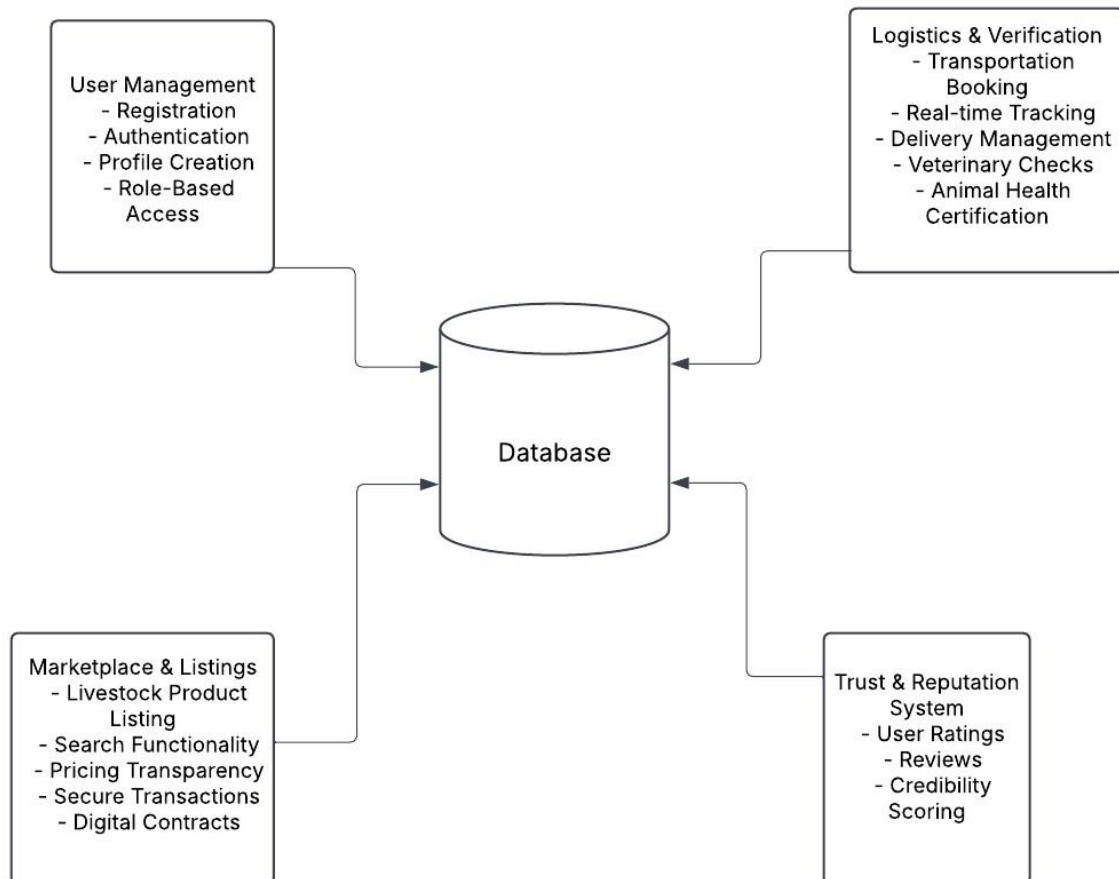
Backend Django

Payment Gateways: M-Pesa APIs.

Database.

MongoDB for data storage.

Conceptual diagram



PROJECT TIMELINE AND BUDGET

Plan	Duration	Deliverables	Milestones
Proposal Planning	Week 1	Draft outline, problem definition (livestock market inefficiencies in rural Kenya)	Outline complete
Proposal Writing and Literature Review	Weeks 1–3	Complete proposal document (Farm Link’s role in digitalizing pastoralist markets)	Proposal ready for review
Proposal Presentation and Approval	Week 3	Slide presentation for supervisor approval	Approved project proposal
Requirements Gathering	Weeks 4–5	Requirement Specification document (user roles: farmers, buyers, transporters, veterinarians)	Requirements signoff
Data Analysis	Week 5	Data Analysis Report (livestock market trends in East Africa)	Requirements finalized
System Design	Week 6	System design document (Django backend, React frontend, MongoDB/P)	Design finalized
System Development	Weeks 6–10	Developed modules (farmer dashboards, vet consultation, payment gateways)	Prototype available
Midterm Report and Presentation	Week 8	Progress report, slides (prototype demo)	Mid-project milestone
Project Implementation	Week 11	Deployed prototype (testing vet API integrations, logistics tracking)	Prototype deployed

Testing	Weeks 12–13	Test Reports (security, user feedback)	System stability confirmed
Documentation	Weeks 14–15	Final Project Report (e.g., code documentation, user manuals)	Documentation complete
Final Presentation	Week 15	Slides, live demo (e.g., farmer-buyer transactions, vet consultations)	Project concluded successfully.

Budget

Item	Quantity	Description	Cost (KES)
Laptop	1	16GB RAM, 2.40 GHz (for coding, testing)	30,000
Internet data	2	Unlimited internet and data connection from mobile phone (for cloud hosting, API and integrations)	3000
Visual studio Code		Community for students its free	No cost
Deployment and Hosting		Free tier (AWS)	No cost
Printing		Reports and user testing materials	2000
MongoDB app		Free tier (Mongo Atlas)	No cost
M PESA API		M-Pesa API integration for secure digital payments	No cost
Total			35,000

Senior Project: Grading Template

Date:

Student Name:

Project Title:

Criteria:

1. Project Proposal (10%) Marks Awarded

- Clarity of project objectives and scope
- Relevance and significance of the problem or challenge addressed
- Feasibility of proposed solution approach
- Adequacy of project plan and timeline

2. Project Plan (15%) Marks Awarded

- Comprehensive project plan outlining tasks, milestones, and dependencies
- Clear allocation of resources (e.g., personnel, budget, equipment)
- Realistic timeline with achievable deadlines
- Identification and mitigation of potential risks

3. Midterm Progress Report (15%) Marks Awarded

- Progress made towards project objectives and milestones
- Adherence to project plan and timeline
- Identification and resolution of any challenges or issues encountered
- Quality of documentation and reporting

4. Final Project Implementation (30%) Marks Awarded

- Completion of project deliverables as outlined in the project plan
- Functionality and effectiveness of the ICT solution
- Quality of code, software, or hardware developed
- User interface design and usability

5. Final Project Report (15%) Marks Awarded

- Comprehensive documentation of project process, methodology, and outcomes
- Clear presentation of findings, results, and conclusions
- Organization, clarity, and coherence of written report
- Proper citation of sources and references

6. Presentation and Défense (15%) Marks Awarded

- Clarity and effectiveness of oral presentation
- Ability to communicate project objectives, methodologies, and outcomes to diverse audiences
- Response to questions, feedback, and challenges during the Défense
- Professionalism, confidence, and engagement during the presentation

7. Overall Evaluation (10%) Marks Awarded

- Overall quality and completeness of the senior project
- Demonstrated mastery of ICT concepts, principles, and skills
- Contribution to the advancement of knowledge or practice in the field
- Reflection on personal learning, growth, and areas for improvement **Total**

Grade:

Additional Comments