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GOWCART: A Digital Platform for Domestic Animals Market

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ABSTRACT: Livestock fairs, also known as 'Pashu Melas', are an important part of the economy of Maharashtra; they provide easy income to farmers and traders as well as promote farms and dairy products in the region. This article examines the economics of these industries, particularly in Maharashtra, and introduces a mobile application designed to improve their operational efficiency. The application aims to address key issues such as price transparency, market access, and digitization of interactions between buyers and sellers. The application enhances the business capabilities of these businesses by providing real-time information on animal prices, market locations, and easy transactions. This study highlights the status of key industries in Maharashtra and explores how digital tools can address regional issues such as price inequality and barriers to access for businesses. Animal husbandry is a part of agriculture that focuses primarily on raising animals. Farming focuses on the use of animal husbandry as a source of income. Many people are engaged in agriculture mainly for sale [12]. Small livestock, namely sheep and goats, have become important in Maharashtra's livestock industry in the last four decades. In 1951, the total number of sheep and goats in the state was 5,822,000. The total number of large and small ruminant animals, including cattle, buffalo, sheep and goats, is 2, 199,100. [1]

KEYWORDS: Livestock Market, Rural Development, Agriculture, Domestic Animal.

I. INTRODUCTION

Animal markets, locally known as Pashu Melas, are an important part of the rural economy of Maharashtra. These industries support the commercialization of animals such as cattle, goats and poultry, which are essential for the city's agriculture, dairy and other livelihoods. For centuries, these markets operated on a large scale, where farmers, traders and buyers came together to barter their animals. Despite the significant economic impact of these industries, their structure remains unregulated, resulting in price volatility, inconsistent market access and lack of legal access. Rural farmers rely on these industries to sustain their income. However, many challenges remain, especially in terms of market transparency, price discovery and access for small traders and farmers. Farming Furthermore, the nature of these markets limits the number of buyers and sellers, keeping them mostly local and negatively impacting the wider economy. These inefficiencies are further compounded by the lack of easy communication. The economic impact of livestock farming is multi-faceted. For rural farmers, livestock farming is an important source of income, accounting for a significant portion of their annual income. This income not only supports local prosperity, but can also be invested in agriculture, education and health, thereby supporting the growth of the whole society. These industries also provide employment not only to those involved in animal husbandry but also to additional services such as transportation, animal care and food. With the rapid adoption of technology in rural India, there is a new opportunity for these industries to innovate and become more efficient. The launch of a mobile app specifically designed for the livestock sector in Maharashtra aims to address these issues. The app has the potential to change the way businesses are conducted by providing instant information on animal prices, market locations and facilitating direct communication between buyers and sellers. Integrating digital tools into rural economies can foster economic participation, expand access to markets and reduce inefficiencies that have long been disruptive.

The mobile app is expected to provide farmers with a number of benefits, including:
Real-time market data: Farmers can access the latest prices, demand and market forecasts, enabling them to make informed decisions on when and where to sell their livestock. The app works with farmers across the country, reducing reliance on middlemen, allowing farmers to stock larger quantities at higher selling prices and increasing their income. Better prices and content support initiatives and empowerment in the sector.

Financial inclusion: The app can help farmers access financial resources to invest in their livestock by providing information on loans and grants. The demand for brokers is high in rural areas; brokers in these areas often charge high fees and control prices to their advantage. Shifting to direct trading models can increase market transparency, promote fair trade and increase trust in society. This study aims to identify the challenges and opportunities in these industries to provide a better understanding to inform policy decisions and support sustainable economic development. Rural areas in Maharashtra are becoming increasingly prosperous. To investigate the importance of entrepreneurship in rural areas of Maharashtra and examine the potential of technology, particularly through mobile app development. This study explores the existing business models, challenges faced by stakeholders and how the use of digital tools can transform these businesses and ultimately contribute to economic and regional development. Use the solution data for further development. Therefore, this study proposes the development of an online livestock trading app as a way to create a data-driven solution as a medium for online livestock sales. Livestock farming relies on livestock as a source of income. Many people are involved in animal husbandry, especially for the purpose of selling livestock. The buying and selling of projects is done through digital platforms that use the Internet as a medium of exchange. The emergence of e-commerce has facilitated online buying and selling, which is key to future business development and profitability.

Competition in the online market is fierce, and there is even price competition. In order to ensure the continuity and growth of the online pet industry, it is important for them to segment the market and offer additional unique advantages in their services. The key to maintaining customer loyalty and consistency in your online store is to provide better service. One of the problems encountered in the sale of live animals is the difficulty of obtaining information about quality and reasonable prices. This competition poses a problem for both sellers and buyers, especially those who want to do livestock farming. To overcome this problem, we propose to solve the problem using technology, as in the example above. One application of this solution is the development of a web-based application that provides information about livestock sales. The aim is to enable consumers and animal sellers to carry out online purchase and sale transactions. The system offers non-cash payment options (exchange) that can be customized according to the buyer's preference. Platforms such as mobile applications that both farmers and consumers can access are also of great importance in preventing the spread of animal diseases. Designed to work on smartphones and tablets, the mobile application is particularly useful for farmers and buyers to establish livestock businesses. Research shows that these applications can help support and reach small farmers and farmers in rural areas. Among many agricultural practices, provision of basic information is considered the most important practice due to the wide knowledge gaps in rural economies in developing countries. The use of mobile applications reduces the transaction and distribution costs associated with selling the products of smallholder farmers, thus increasing their income and inputs. [18]

According to the research [11], using an application for selling animals via the website has a positive effect on increasing sales. Because the system can support sales not only directly but also via online platforms. Using this system can lead to efficient and accurate data management. The purpose of creating this online system is to popularize animal sales. All details of animals and their available products are clearly displayed to make it easier for customers to place orders. The aim is to simplify the livestock buying and selling process, from selecting animals to ordering them and paying for delivery. It is hoped that this process will help communities access quality livestock at affordable prices and improve the process of distributing livestock to those in need. This study adopted a qualitative approach using methods such as field observations, interviews, and literature review. Farmers traditionally did not pay much attention to marketing campaigns, relying mostly on word of mouth and personal sales; however, these processes have not worked well in the digital economy. The aim of this study is to identify and evaluate how digital marketing can help expand the potential of livestock products from specific regions to urban areas. The results of this study should be part of the analysis of livestock platforms or other companies in the field, in order to provide more power and benefits to farmers in the region, especially through optimizing the use of technology, especially advertising. This study suggests that developers of digital livestock marketing mobile applications should consider farmers' lack of digital literacy as a key factor affecting their willingness to use new technologies. Bridging the digital literacy gap can ensure that these applications are adopted and used effectively by the farming community.

II. LITERATURE REVIEW

Livestock Industry in India: Current Status, Emerging Issues and Long Term Prospects - Livestock farming is a major agricultural sector in India and has a major impact on the country's economy and trade. is carried out by many rural families. For farming families, livestock farming is an important source of animal protein through the production of milk, dairy products, eggs and meat. Animals are used for food purposes as well as in agriculture and transportation, while their manure helps in increasing soil fertility. The vast majority of rural farmers' income comes from livestock farming and the sale of its products. Some of India's livestock sectors, particularly poultry and dairy, have experienced significant growth in recent years. This expansion has occurred under conditions of self-sufficiency and tight control of domestic economic activity. India has implemented a trade reform strategy to protect the economy from external pressures through measures such as comprehensive restrictions on imports and exports to increase domestic production. Exports and imports (the process of exporting and importing by the government or government agencies). Competition in the corporate sector is regulated by licenses. India has adopted a more liberal agricultural policy since the early 1990s, which was further consolidated with the signing of the Uruguay Agricultural Agreement (URAA) in 1994. This global trade process should also include local industries in global markets, providing safer food products and quality standards. Other important factors affecting the global economy, such as urbanization, income growth, accelerating domestic demand for livestock products, and technological advances, are also expected to have a significant impact on livestock production. These developments will lead to significant changes in the structure and functioning of livestock farming, leading to increased competition and rivalry. Many developing countries, including India, find livestock production particularly vulnerable to economic liberalization due to the small scale of agriculture. Devianto's presentation, "Development of an Information System for the Purchase, Sale, and Distribution of Slaughtered Animals in the Jabodetabek Region," concluded that the Qurbanbanku application was designed to simplify the process of selling, purchasing, and distributing sacrificial animals at the Qurban Haji Ugan Animal Farm. [17]

Pakaya, Tapate and Suleman's research focused on developing an application that would transform the business of buyers and sellers of sacrificial and akika animals, including the goal of promoting sales. The researchers used the Unified Modeling Language (UML) approach to model the system. [18]

A study by Rasyid, Musyaffa, Mohammad, and Nuraminah addressed the challenges of analyzing time-consuming sales data and customer service. To address these issues, the authors developed an e-commerce platform that used rapid development techniques to facilitate business growth. [19] Wulandari, Prayoga, Putro, and Wahyuni used modeling and black-box testing methods to evaluate the performance of the application. The online process used by the website was beneficial for Raisha Farm, increasing sales and improving the efficiency and accuracy of data management. [20]

A study conducted by Silviana and Sutarmin on a website application for the sale of Qurban and Aqiqa animals found an increase in sales both directly and through online sales. Online platforms aim to expand the market and provide detailed information to help buyers make decisions. [21]

III. METHODOLOGY

Marketing research covers many important aspects. It includes analysing farmers and suppliers, needs and challenges, measuring market size and expansion, and studying competitors. The goal is to understand how the platform can save time and money, reduce animal cruelty, and connect communication with business. The research process also includes collecting user preferences, assessing trends, and adjusting the platform to meet user needs. Direct communication between buyers. The platform should use methods that will increase business efficiency, reduce animal waste from fast shipping, and provide business insights that will minimize operational inefficiencies. It should also be easy to use on mobile devices and web browsers, with support from a support team in case of any issues. The principle of online pet marketing is to adopt a user-friendly model with web and mobile interfaces for easy access. The back-end infrastructure uses micro services to handle core tasks such as user authentication, pet advertising, financial transactions, and user interactions. The platform includes features such as flexible pricing, payment protection, and messaging capabilities, as well as a collaborative approach to reducing animal waste. The system is designed to be scalable and easy to use, while data-driven insights can be used to reduce business inefficiencies. The analysis of the business model includes many measures: the number of buyers and sellers, barriers to entry and exit, access to information, and many more. These standards create a business environment for manufacturers and other business organizations. The assessment of the

business includes four aspects: business progress, focus on establishing business organizations, improving resource utilization, improving product quality, and doing the best business at low cost.
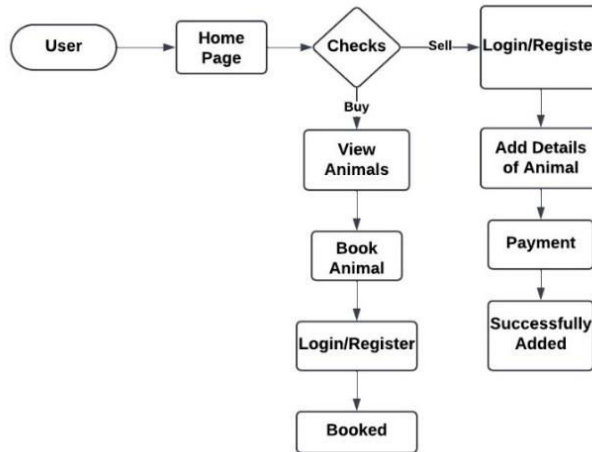

Fig.1. Proposed System Architecture

Primary and secondary data were collected in this study. Primary data were collected through direct observation and questionnaire-based interviews. Secondary data were obtained from various sources such as books and journals to support the primary data. Data collection was done using qualitative and quantitative methods and presented in the form of descriptive and quantitative statements. A descriptive approach was adopted in data analysis.
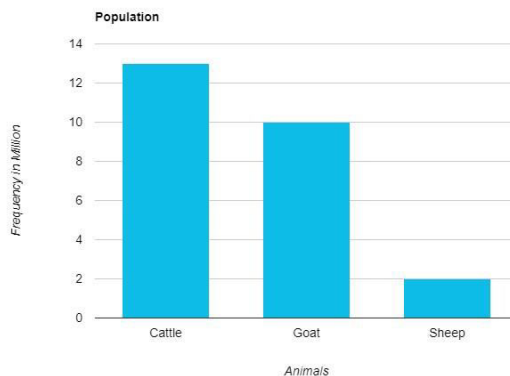

Fig.2. Bar Chart of Domestic Animal Population in Maharashtra

The map nicely shows the distribution of livestock in Maharashtra. Several important observations can be drawn from the data presented:

Land dominance: Cattle outnumber goats and sheep, indicating their importance in the state's agricultural system and trade. However, they are still important to certain regions or communities in Maharashtra.

Data limitations: This image is for informational purposes only regarding our domesticated animals. Data is needed for other animals, such as swine, cattle, and poultry, to get a complete picture of livestock in the state. However, more analysis and additional data is needed to fully understand the role and importance of livestock in the state's agriculture and economy.

A comprehensive methodology for developing a Here's a revised version of your content, rewritten to ensure originality while maintaining its structure and comprehensive detail:

The process of developing a platform for buying and selling livestock requires a systematic approach encompassing planning, design, development, and evaluation. Below is a structured methodology broken down into essential phases:

1. Research and Planning Phase

This initial phase is dedicated to identifying challenges, gathering requirements, and defining the framework for the project.

Identifying the Problem:
Analyze the existing challenges in the livestock trading process, such as inefficiencies in communication, lack of price transparency, animal health management, and transportation or logistics issues.

Engaging Stakeholders:
Consult with key participants, including farmers, buyers, veterinarians, and intermediaries, to understand their specific challenges and expectations. Use tools such as surveys, interviews, or focus groups to collect insights.

Conducting Market Research:
Study the strengths and weaknesses of existing livestock trading platforms. Identify gaps that can be addressed and evaluate the readiness of your target audience to adopt digital solutions.

Researching Legal and Regulatory Requirements:
Investigate laws and regulations related to animal welfare, trading practices, and licensing in the regions you aim to serve.

Requirement Analysis:
Establish a clear understanding of what users need:
•User Personas: Define profiles for different user groups, such as small-scale farmers, bulk buyers, transport providers, and veterinary service providers.
•User Stories: Create scenarios describing how each user type interacts with the platform. For instance, "As a farmer, I want to easily list animals for sale with detailed health and age information."
•Feature Specifications: Outline essential features, such as user registration, animal listing creation, search and filter options, payment integration, uploading of health certifications, and logistics management.

Choosing the Technology Stack:
Select a technology stack suited to the project's needs, such as the MERN stack (MongoDB, Express, React, Node.js), ensuring scalability and adaptability for future enhancements.

Feasibility Assessment:
Evaluate the technical, financial, and operational feasibility of the project. Identify risks and create strategies for mitigation.

2. System Design Phase

This phase emphasizes creating a detailed blueprint for the application, covering technical architecture, database structure, and user experience design.

Architectural Planning:
Design a robust and scalable system, including:
•Client-Server Model: Define how data flows between front-end interfaces (web or mobile) and the back-end server.
•Cloud Infrastructure: Plan for cloud-based solutions (e.g., AWS, Azure, or Google Cloud) to ensure data security, manage server loads, and maintain uptime.
•Microservices Architecture: Consider breaking down functionalities into modular components, such as listings, payment handling, and logistics.

Database Design:
Design the database to handle structured and unstructured data effectively:
•Create an Entity-Relationship Diagram (ERD) to map relationships between entities like users, animals, transactions, and services.
•Implement secure handling of sensitive information, including payment details and veterinary records. Use databases like MongoDB for flexibility or MySQL for structured relationships.

Designing User Interfaces:
Develop wireframes and mockups with a focus on usability:
•Wireframes and Prototypes: Create both low-fidelity wireframes and high-fidelity mockups for navigation flow and workflows.
•User-Friendly Design: Ensure simplicity and accessibility, especially for users unfamiliar with technology. Design for mobile responsiveness and offline functionality for areas with limited connectivity.

Testing the Prototype:
Develop an interactive prototype and gather user feedback to refine the design before moving into full development.

3. Development Phase
This stage involves turning the designs and plans into a functional application.

Iterative Development:
Adopt an Agile methodology to facilitate iterative development, allowing frequent updates and feedback during the process.

Database Implementation:
Configure the database to handle the storage, retrieval, and updating of data related to user profiles, listings, and transactions.

API Development:
Develop secure RESTful APIs to ensure seamless communication between the front end and back end.

Implementing Authentication:
Introduce secure login and role-based access using technologies such as JWT or OAuth to differentiate user permissions (e.g., sellers, buyers, veterinarians).

Building the User Interface:
Create responsive front-end interfaces that allow users to register, manage listings, search for animals, complete transactions, and use messaging systems. Prioritize intuitive layouts for an optimal user experience.

IV. DISCUSSION

Creating a dedicated platform for buying and selling domestic animals, specifically designed for farmers, represents a transformative step in modernizing the agricultural marketplace. This discussion explores the key aspects of the project, including its importance, contributions, challenges, future possibilities, and potential impact.

Significance:
The importance of such an application lies in its ability to revolutionize the traditional livestock trading system by making transactions between farmers and buyers more efficient and streamlined. The platform eliminates geographical limitations and offers a centralized marketplace for trading. By providing a more organized and time-saving solution, it addresses inefficiencies in the existing system, such as fragmented markets and logistical hurdles.

Contributions:
The app's main contribution is the establishment of a transparent, cost-effective, and efficient marketplace for livestock trading. By digitizing the buying and selling process, it reduces the time and expense associated with traditional

methods. The platform also minimizes waste by ensuring livestock is sold promptly, preventing issues like overfeeding or declining health while awaiting buyers. Additionally, the app fosters improved communication and reduces dependency on intermediaries, empowering farmers and buyers to interact directly.

Challenges:
The app is likely to encounter several challenges during its implementation and adoption. A significant barrier could be the limited technological literacy and internet accessibility in rural areas, potentially hindering widespread adoption. Building trust among users is another challenge, as buyers need assurance regarding the quality and health of the livestock being sold. Logistical complexities, such as organizing transportation and ensuring timely deliveries, add another layer of difficulty. Furthermore, the app must comply with legal and ethical regulations related to animal welfare, health certification, and trade practices.

Future Directions:
Looking ahead, the app has the potential to incorporate advanced technologies to enhance its functionality. For instance:
Artificial Intelligence (AI): AI can be used for dynamic pricing suggestions, ensuring fair market rates based on trends and demand.

Blockchain Technology: Blockchain could enable secure, transparent transaction records and maintain traceability for livestock health and ownership history.

Expanded Services: Adding features such as access to veterinary services, feed suppliers, or logistics networks could significantly increase the app's value proposition.

Global Marketplace: Scaling the platform to support international trade could foster a global livestock marketplace, enabling cross-border transactions and opportunities for growth.

Potential Impact:
The impact of this platform on the agricultural sector could be profound, particularly in developing regions. By reducing transaction costs and improving access to markets, it could substantially enhance farmers' incomes and improve livestock management practices. The app's ability to promote sustainability, reduce waste, and encourage innovation has the potential to positively influence the broader agricultural ecosystem. In addition, digitizing livestock trading could inspire technological advancements in other agricultural sectors, driving overall growth and efficiency in the industry.

V. SUMMARY

1. Af In conclusion, creating an online platform tailored to farmers for buying and selling livestock presents a valuable opportunity to bridge the gap between sellers and buyers. The platform's effectiveness can be enhanced through features such as detailed animal listings, intuitive search filters, and well-crafted seller profiles. Additionally, incorporating functionalities like user accounts, feedback mechanisms, secure payment options, and direct messaging will not only simplify transactions but also foster trust within the community.
2. To maximize accessibility, the platform should be optimized for mobile use, ensuring it caters to a broader audience, especially in rural areas. Including educational content on best practices for livestock care, trading tips, and market trends can further engage users and add long-term value.
3. The overarching aim of this initiative is to create a reliable, efficient, and farmer-centric marketplace that meets the specific needs of its users while supporting the growth of Maharashtra's agricultural economy. By leveraging technology to enhance communication, transparency, and convenience, the platform has the potential to become an indispensable tool for farmers looking to trade domestic animals effectively.

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