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Smart Local Farmers Marketplace System Using Digital Commerce Technologies

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ABSTRACT:-

This research paper presents the design and development of a Smart Local Farmers Marketplace System that leverages digital commerce technologies to connect local farmers directly with consumers. Traditional agricultural supply chains rely heavily on intermediaries and middlemen, which reduces farmer profitability, increases produce prices for consumers, and creates inefficiencies in the distribution of fresh produce. There is a growing need for a transparent, technology-driven platform that enables farmers to market and sell their produce directly.

The proposed Smart Local Farmers Marketplace System provides a digital platform where farmers can register, list their produce with pricing and quantity details, and manage orders in real time. By utilizing e-commerce technologies such as secure online payment gateways, geolocation-based matching, inventory management, and mobile-friendly interfaces, the system enables consumers to discover and purchase fresh produce directly from nearby farmers, ensuring convenience, transparency, and fair pricing for both parties. The study highlights how digital commerce technologies eliminate unnecessary middlemen, reduce food wastage through timely local sales, provide real-time order tracking and delivery coordination, and build trust between farmers and consumers through transparent transactions. Additionally, the integration of digital payments, rating systems, and inventory dashboards enables farmers to manage their business more efficiently while reaching a wider local customer base.

The paper concludes that a Smart Local Farmers Marketplace System significantly improves farmer income, market transparency, and the overall efficiency of local agricultural supply chains, while supporting the broader goal of digital transformation and economic empowerment in the agricultural sector.

INTRODUCTION

In today's digital era, the agricultural sector still largely depends on traditional supply chains involving multiple intermediaries such as commission agents, wholesalers, and local mandis. This dependency often results in delayed payments, lower profit margins for farmers, and higher prices for end consumers. The increasing gap between farmers and consumers has created significant challenges in ensuring fair pricing, product freshness, and transparent trade practices.

To address these challenges, digital commerce technologies have emerged as a promising solution for empowering local farmers and modernizing agricultural trade. E-commerce platforms, mobile applications, and secure digital payment systems allow farmers to bypass unnecessary intermediaries and sell their produce directly to nearby consumers, ensuring better price realization and faster transactions.

A Smart Local Farmers Marketplace System enables farmers to create digital profiles, list available produce with real-time pricing and stock information, and interact directly with consumers in their locality. This ensures that transactions are transparent, produce reaches consumers while fresh, and farmers receive fair value for their goods without excessive commission cuts from middlemen.

This research paper explores the design, development, and implementation of a Smart Local Farmers Marketplace System using digital commerce technologies. The study highlights how such a system streamlines the buying and selling process, simplifies order and delivery management, reduces dependency on intermediaries, and strengthens trust between local farmers and consumers.

The core objective of this study is to analyze how digital commerce technologies can be applied to build a functional and scalable local farmers marketplace, improve produce discovery and price transparency, and support the digital transformation of rural and semi-urban agricultural trade. The paper demonstrates the benefits of direct market access, real-time inventory management, secure digital payments, and location-based farmer-consumer matching.

Review Of Related Literature:-

The adoption of digital commerce technologies in agriculture has significantly improved market access, price transparency, and supply chain efficiency for local farmers. Several research studies demonstrate the effectiveness of digital marketplace platforms in strengthening direct farmer-to-consumer trade.

Digital Platforms for Agricultural Marketing:

According to Verma et al. (2021), digital agricultural marketplace platforms provide farmers with wider market reach and reduce their dependency on traditional intermediaries, resulting in improved income and reduced post-harvest losses.

A study by Iyer & Rathod (2020) highlighted that mobile-based farmer marketplace applications significantly reduce transaction costs and improve price transparency for both farmers and consumers.

Mobile Commerce and Farmer Empowerment

Mobile commerce plays a crucial role in empowering local farmers by providing easy access to digital marketplaces. Research by Nair & Deshmukh (2022) demonstrated that mobile-first e-commerce platforms enable farmers with limited technical literacy to list produce, receive orders, and accept digital payments without the need for intermediaries.

E-Commerce Integration in Rural Supply Chains

Integration of e-commerce technologies into rural agricultural supply chains has enhanced product visibility and delivery coordination. As observed by Chavan & Pillai (2021), digital marketplace systems promote transparency, accountability, and trust between farmers and consumers through real-time order tracking and secure digital transactions.

In summary, literature on digital agricultural marketplace systems consistently indicates that digital commerce technologies improve farmer income, enhance market transparency, and promote efficient local produce distribution. These systems form the foundation for the digital transformation of rural agricultural trade and farmer-consumer relationships.

METHODOLOGY & IMPLEMENTATION

A. Research Methodology

This research paper adopts a qualitative and exploratory approach to analyze the effectiveness of digital commerce technologies in building a Smart Local Farmers Marketplace System. The study is based on secondary data collected from agricultural e-commerce research papers, digital marketplace case studies, and rural technology adoption reports.

A comparative analysis was conducted to evaluate how digital marketplace platforms improve produce discovery, price transparency, and transaction efficiency compared to traditional farmer-to-market trade methods.

B. Data Collection

Data was gathered from:

- Academic journals and conference papers on Agricultural E-Commerce
- Digital marketplace and mobile commerce reports
- Farmer marketplace application case studies
- Government and agricultural department documentation on farmer welfare schemes
- Industry reports on local produce delivery and logistics systems
- Technical documentation related to payment gateways and geolocation-based APIs

These sources provided a comprehensive view of platform usability, transaction security, delivery efficiency, scalability, and technological adaptability for local farmers marketplace systems.

CONCLUSION:-

The study concludes that a Smart Local Farmers Marketplace System significantly improves traditional agricultural trade processes by enhancing transparency, accessibility, and efficiency. Digital commerce technologies enable local farmers to reach consumers directly, ensuring fair pricing and timely sale of fresh produce.

The research highlights that digital marketplace platforms not only improve farmer income and produce visibility but also reduce food wastage and transaction delays. Secure digital payments, geolocation-based matching, and real-time inventory management provide a reliable framework for connecting farmers and local consumers efficiently.

Furthermore, digital commerce-based marketplace systems support rural digital transformation initiatives by facilitating seamless interaction between farmers, consumers, and delivery partners. The transparency and convenience provided by such platforms make them an ideal solution for modernizing local agricultural trade.

Future research may focus on integrating Artificial Intelligence (AI) for demand forecasting, IoT-based cold storage monitoring, blockchain for supply chain traceability, and advanced logistics optimization to further enhance the capabilities of Smart Local Farmers Marketplace Systems.

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