

Research on the Application of Blockchain Technology in the Quality and Safety of Green Organic Agricultural and Livestock Products: A Case Study of Yak Products in Qinghai Province

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Abstract : Product quality and safety serve as the foundation and guarantee for Qinghai Province to establish itself as a hub for green organic agricultural and livestock products. Although an internet-based system platform has been established to enable quality traceability queries for yak products, issues such as information silos, data distortion, and excessive centralization persist in quality and safety supervision. These challenges undermine data reliability and hinder the full functionality of the platform's traceability features. This study aims to construct a quality and safety supervision system for green organic agricultural and livestock products in Qinghai Province, ensuring data security throughout the breeding, slaughtering, and distribution stages of yak production. This study leverages the Fabric technology platform to integrate blockchain technology into the existing regulatory framework, constructing a quality supervision system comprising five stakeholders: regulators, yak farms, slaughter and processing enterprises, logistics and transportation enterprises, and sales enterprises. Through a six-tier structure for data collection and processing, the system standardizes the data-on-chain process and ensures rapid interaction across all stages. An ERP sandbox simulation demonstrates that the system improves the overall compliance rate of yak product supervision and inspection by nearly 10% compared to the previous year, increases the compliance rate of market sample inspections by 48%, and enhances economic benefits by 46%. This study develops a transparent and secure quality safety application system that ensures the quality of yak products, enhances their market competitiveness, and serves as a valuable reference for the quality and safety supervision of other organic agricultural and livestock products. It aims to promote the sustainable development of green agriculture on the Qinghai-Tibet Plateau.

Keywords : Qinghai Tibet plateau, green organic agricultural and livestock products, blockchain technology, yak products, quality and safety

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